EKISTICS

ABSTRACTS ON THE PROBLEMS AND SCIENCE OF HUMAN SETTLEMENTS

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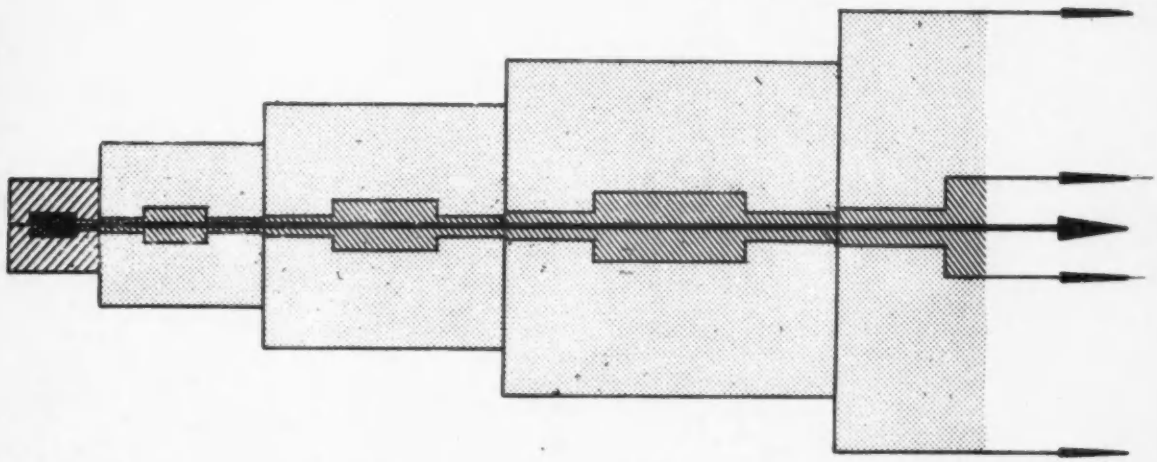
JANUARY · 1960



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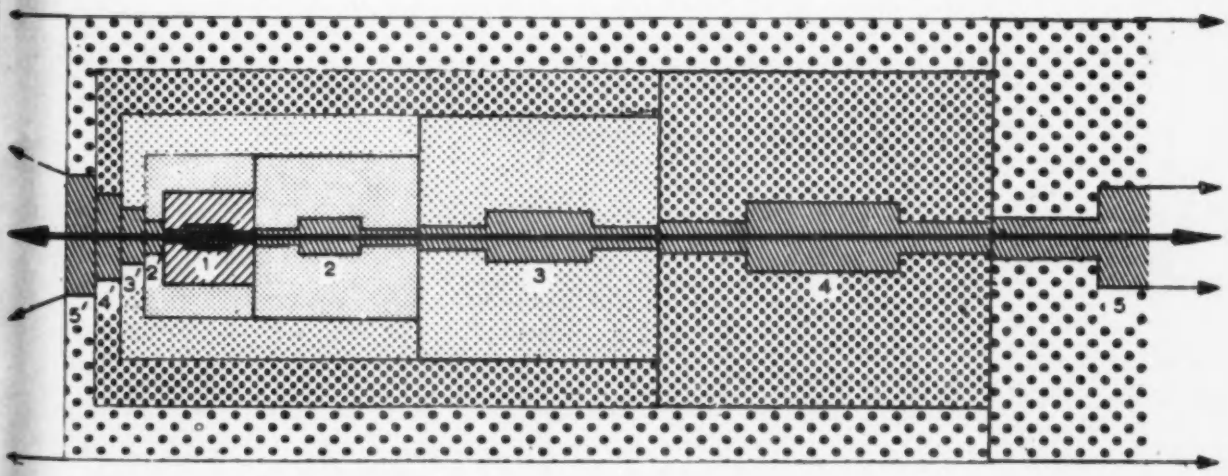

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E K I S T I C S

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EKISTICS is compiled by Mrs. Gwen Bell under the direction of Prof. J. Tyrwhitt.

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EDITORIAL

Dr. C. A. Doxiadis sets the theme of the first issue of EKISTICS in 1960 with a stimulating article on the city of the future: dynapolis. He states the three major problems which demand a new form for the city as (1) the unprecedented increase in the population, (2) the introduction of the machine into everyday life, and (3) the gradual socialization of the patterns of living. In seeking solution, Dr. Doxiadis arrives at the concept of a dynamic city with the ability to cope with the increasing scale of each of these problems. The abstracted articles in this issue focus on analyzing and solving the second and third problems, and February EKISTICS will feature the analysis and directions for solution to the problem of population growth.

THE CITY OF THE FUTURE AND THE MACHINE

Homer Hoyt, a noted American economist, contrasts the development of American, European and Asiatic cities in relation to the machine. He points out the different ways in which the machine has affected these cities due to their various levels of development and cultural environments.

There seems to be an over-balanced demand for rationalizing plans for cities of the future in terms of the automobile. Actually, this is only one particular machine of the many which are providing new problems. Arthur Grey, Jr., suggests that Los Angeles, a city which is oriented to every individual having a motor car, become the prototype of the city of the future. Then, Malcolm MacEwen sets up Los Angeles as the great problem city where all human scale is lost in a "motropolis."

Three different ways are suggested to accommodate both the human scale and the motor scale in the city: (1) Separating people and automobiles in different precincts at the same level; (2) placing the people above the automobiles; and (3) placing the automobiles above pedestrian areas, on top of the buildings. Victor Gruen's plan for the center of Fort Worth and the Kalamazoo, Michigan, mall now built are examples of the separation of the auto and people in different precincts. The competition plan for the City of Berlin prepared by O. Boissevain, P. Johnson-Marshall, and C. D. Buchanan presents a rather exciting idea for the placing of traffic underground allowing the ground area to be free for the circulation of people. Yet, perhaps the most utopian kind of plan is the placing of the traffic on top of the buildings. This proposal was made this year by the Glass Age Development Committee. It is actually very similar to a proposal made in 1933 by LeCorbusier for Algiers which we have shown in contrast.

In the report on planning in Tokyo, the approach seems to be trying to grapple with both the machine in terms of the automobile, and the technical possibilities of

expansion of the city in height. This report points out the confusion in the search for an answer to the future of Tokyo, e.g., even the small scale proposals which have been built thus far turned out much different than the architects and planners drawings, often not accomplishing the original intent.

While the problem of the automobile has much more impact on present day living, planning for the development of atomic power and its companion radiation offer long range challenges for providing for the future health and welfare of the people. A most interesting planning analysis of "Radioactivity: Cloak and Geiger" brings forth significant problems of the city.

THE CITY OF THE FUTURE AND SOCIALIZATION OF PATTERNS OF LIVING

The provision of low cost housing and of community facilities is gaining in importance in both the developed and emerging countries of the world. The Imperial Tobacco Company African Organization has built a number of villages in the Federation of Rhodesia and Nyasaland for their workers. While they are making possible higher levels of living for the people, these villages suffer from both monotony and control by a single industry. Greendale, Wisconsin, a new town built originally with federal subsidy in the 1930's, has neither of these two stigmas. However, the housing has gradually raised from low cost to middle income defeating one of the primary purposes of the program.

Planning for the needs of children is a significant consideration in the building of mass housing projects everywhere. L. E. White, an officer of Harlow new town, has suggestions for this from the housing managers point of view; Muriel Smith has outlined the various facilities which might be provided to make interesting areas for children; and the playgrounds in Switzerland show the possibilities of providing imaginative play areas.

GRADUATE TRAINING IN EKISTICS

With the growth of these problems in the building of settlements, the need for Ekistics studies also grows. This month, a review of the master's program of Ekistics at the Athens Technological Institute is presented. In August and November issues of EKISTICS (HIB-GA 46, HIB-GA 49) a review was presented of the two year course in Ekistics. Through the studies offered in these curricula, the student is sought to be equipped with the basic knowledge to be able to face the challenge of new developments and the evolving patterns for living.

D Y N A P O L I S

T H E C I T Y O F T H E F U T U R E

By Dr. C. A. Doxiadis

Abstracts from a Report Prepared for the Conference of The Polish Academy of Sciences and the Institute of History of City Planning and Architecture

IN WARSAW, 15-17, October 1959

Doxiadis, C. A.
DYNAPOLIS, THE CITY OF THE FUTURE

A. PROBLEMS OF OUR ERA

1. The cities of our era are confronted with a great number of problems. Some of these problems have been inherited from the past and others are recent developments of our time. All these problems, combined with those that may be reasonably anticipated to descend upon our cities in the years to come, produce quite an unenviable perspective for the city planner of today.

2. In building for the future we have to face all these problems - past, present and future - and provide for their solution right from the very beginning. The success of our work lies basically in our becoming aware of the true nature of the problems that our cities are facing today. The contrary will mean that their condition will shortly become much more problematic. The chance of creating a city that can stand up against the passage of time - the city of the future - will be all but lost.

Three main problems

3. The problems which are common to our cities are those which are due to the unprecedented universal increase of population, the introduction of the machine into our lives and the gradual socialization of the patterns of living.

4. For the first time in the history of mankind average birth rates are on a constant increase. Improvement in public health has counterbalanced all destructive forces and has left the world with a huge net gain in numbers. This tremendous increase gives us the scale by which the requirements of new human settlements have also increased.

5. Then we have had the multiple impact of the machine on our lives. It not only made possible but has in fact brought about large concentrations of people in the same area by reducing distances, by making possible multi-storey structures and by introducing the economies of scale in the production for large numbers.

6. The third big change which has come about is a gradual socialization in the patterns of living. Irrespective of political and economic systems, we have in our days a shift towards ever greater interest in ever greater groups of people. The architect and engineer of yesteryear used to build temples and churches for the gods or palaces for kings and feudal lords and up to a century ago residences for financial magnates or rich bourgeois, major government centers, monumental squares, parks and avenues. Now the emphasis is on housing for the less privileged people; on the facilities which serve the whole population irrespective of economic and social status.

7. All these three developments have caused an immense increase in the demand for settlements, in the broadest sense of the word. The increase of population and the introduction of the machine have mainly affected the increasing size of cities. The gradual socialization is mainly affecting their quality. The qualitative effect of socialization has emphasized the importance of a number of "essentials" which a short while ago were not even known.

The fourth dimension: Time

8. Means to face this increased demand for settlements have become available. One of the most important changes brought about by these developments is the change in the notion of how a human settlement expands. In the past, settlements grew principally in length and width, whereas in the last century they have acquired a three dimensional growth; they are also expanding in height. For thousands of years people lived mostly in houses of 1, 2 or 3 floors. Now many live in high rise buildings.

9. In the modern city the fourth dimension, its dynamic growth through time, is a dominant feature. A good illustration of the effect of the fourth dimension on our cities can be given by the frequency of cases in which cities outgrow their plans and surveys faster than they can be prepared, submitted and approved. The importance of this dynamic element of rapid overgrowth that we have called the fourth dimension is so characteristic of our settlements today that it must take precedence in all our planning considerations.

10. Another basic change in our cities is the unit around which our thoughts about planning develop. For thousands of years settlements were planned with man as the unit. These settlements were crossed by man or by animals and animal-drawn vehicles travelling at speeds attainable by man. Now the new unit is the machine, which covers proportionately much greater space in our plans and which tends to practically drive man out of the city.

11. Mechanized vehicles first entered the central parts of our streets very modestly, pushing man to the sides, but they have now reached the point of imposing restrictions on the movement of people, even when idle and parked. The car is gradually driving man out of his century-old natural space. It has introduced a new scale in the synthesis of human settlements because of its physical size and speed. This difference of size and speed between man and machine creates many economic, technical and cultural problems. It causes man and machine to compete for space and movement within the settlement and often makes man wonder whether it is he who serves the machine rather than being served by it. The speed of the machine makes man a refugee in his own habitat, seeking protection and constantly trying to get out of the way of the machine.

Countries undergoing rapid development

12. All these problems which have been mentioned above as being common to all countries have been magnified to an unbelievable degree in those countries which are now entering an era of development. These countries are caught in a period of transition between two worlds that differ both technically and culturally. This is particularly true where changes are taking place at a very fast rate.

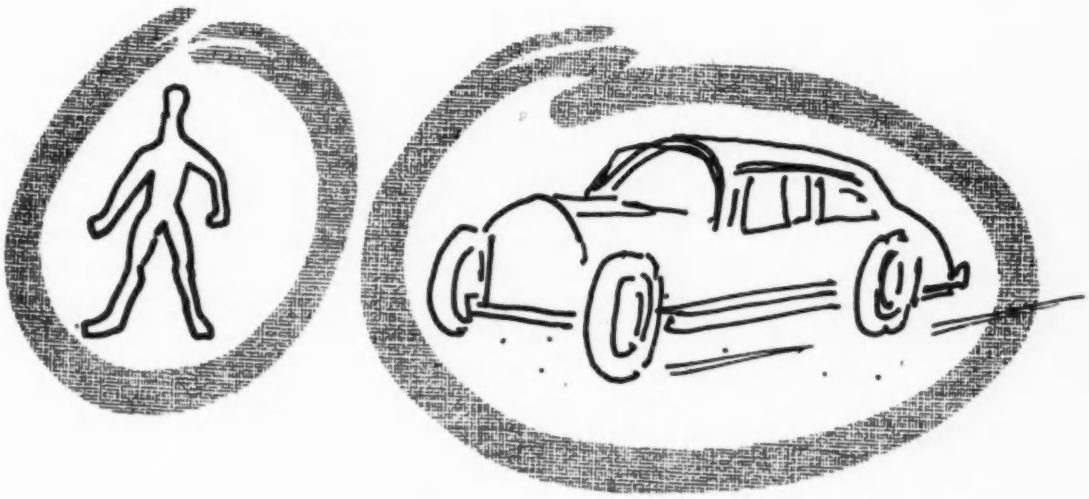
13. The main changes are caused by an increase in income and the development of new family patterns in urban areas. The most characteristic example is the breaking down of the large patriarchal family into smaller units, each demanding higher standards of living, more houses, more facilities. The old family had a large courtyard as its common space whereas each new family requires a closed western style living room for the same purpose - not to mention other demands such as the size and type and number of rooms, etc.

14. By far the most important change, however, has resulted from the new social order, generated by development. In the place of the old feudal pattern of land ownership we have now land reform and redistribution and in the place of the lords and serfs, we now have the rural dweller and the urban dweller, who are both fully recognized citizens. This implies a change in the pattern of distribution of human settlements in a certain area. The feudal center has now lost its importance as the focus of power and protection and the pattern of settlements tends to become rationally adapted to new economic or physical conditions.

15. The new patterns have also been affected by the creation of new economic functions. In the past, we had agricultural economies everywhere, while now we have industries, whose location is determined by many natural or man-made factors, thus upsetting the old pattern of distribution, the old network of communication and transport facilities, the location of educational institutions, military centers, etc.

Factors in planning for the future

16. When contemplating the problems of settlements we should not limit our query to the problems of the present. We have to look into the future, because the settlements that we are planning and building today, must serve people and functions for several generations to come. Some of their components, such as houses and their facilities, may be replaced or done away with in one or two generations. The basic frame, however, which we will create now, will last for several generations and perhaps several centuries. We have therefore to make allowance for the problems of the future. Being in a transitory stage from the standpoint of development, making such allowances for the future becomes a little complicated. There will be changes that we will not be able to determine and problems that we are not going to be able to foresee. We can, however, foresee the evolution we are likely to have in every special category of problems.



The unit of magnitude, man, was replaced in our cities by the new unit, the machine, which covers a proportionately much larger space.

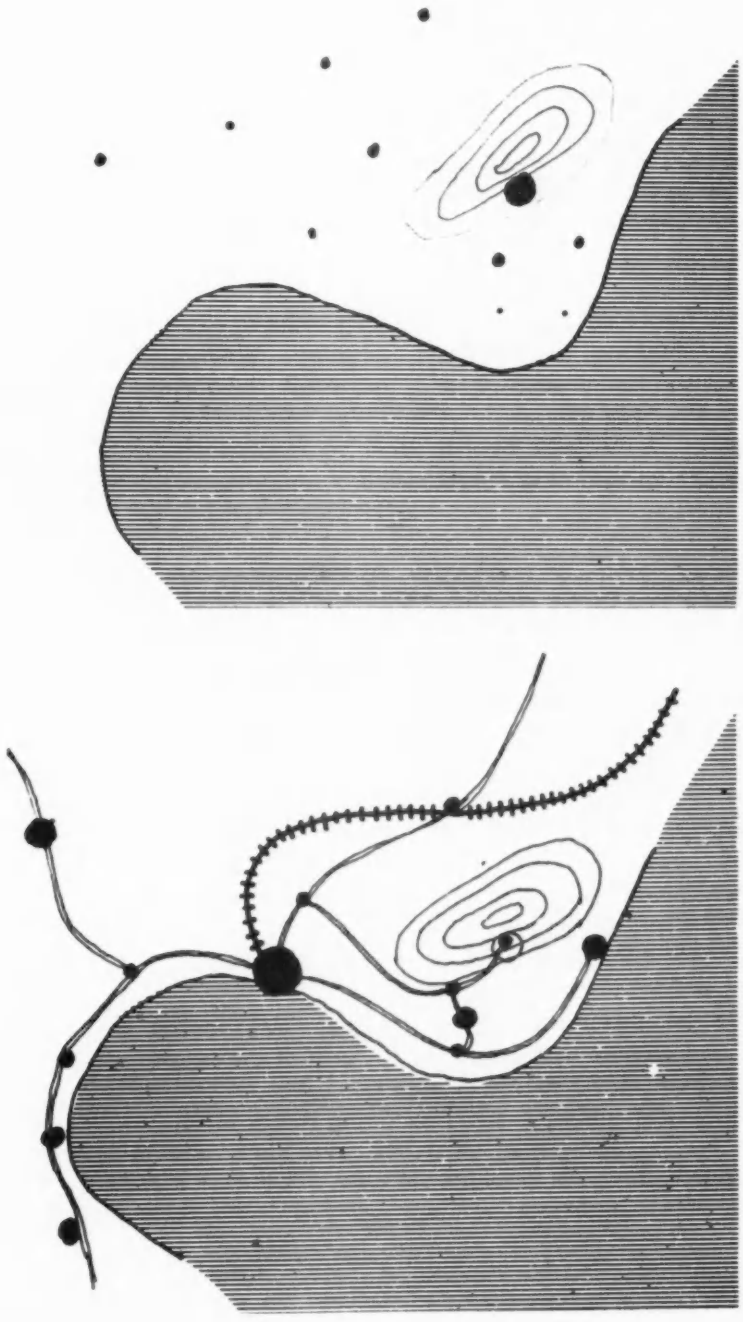
17. Some foreseeable developments are already apparent. One of these is the population increase. Despite what is being said to the contrary, even countries of higher income levels per capita today, have increasing birth rates. This allows us to assume a growing world population for quite some time to come. This in turn will bring about an even greater increase of urban population. In this era of mechanization, the increasing productivity in the rural areas will divert more and more manpower from agricultural occupations to city jobs. This added influx of people will cause the cities to swell and expand over much larger areas than they occupy today.

18. Another similar phenomenon is the unprecedented increase in per capita productivity to be brought about by automation and the use of nuclear energy in all kinds of production, that will make possible the production of more cars, more appliances, more facilities per capita in every city. This increased equipment and appliances will oblige our consideration of space and other functions to be in constant change, thus making our problem one of allowing for adjustments of size; size of buildings and houses, size of streets and of whole settlements.

19. The tremendous increase in per capita productivity made possible by new techniques will require less and less people and time for the production of more and more goods. This will result in the progressive shortening of the working week and a corresponding increase of the leisure time which people will have at their disposal for entertainment and recreation. The 4-day week is already in sight, as well as the problem of what working people will do during the remaining three days, in order to keep their social and mental balance. Week-end excursions are no solution, as has been clearly shown by the congestion on highways and the high accident toll of long holiday week-ends. Are we going to provide forms of recreation for these people inside their houses or take them to new places of recreation through new means?

20. Another development which we can readily foresee is rapid changes in technique. We have just become fully conscious of the consequences of the intrusion of motor cars into our cities and yet tomorrow we may have different types of cars, perhaps self-driven with electronic devices, which will require special highways, much wider streets and control stations. Air transport will be correspondingly important. It is becoming so that in several big cities in the U.S., as well as in Europe, the helicopter, the vertical-landing-and-take-off aircraft and the hovercraft, will soon require new types of landing fields, may be roofs of buildings or special areas on highways and central streets. Not to shock anyone into disbelief, I am limiting myself to transport media which are now entering the implementation stage and do not venture into other fields, such as the multi-purpose vehicle which will drive on earth and fly in the air or the amphibian car, etc. All these devices are going to be revolutionary for the structure of the cities.

21. Cars, trucks and buses have already caused the decline of the small market town, which is now outdated. New means of transport may render some types of settlements



Economic development creates new settlements and new patterns of living

inadequate and make new types necessary. New techniques in air-conditioning and in construction may allow for completely different types of buildings with entirely new techniques.

22. In the field of socialization the present trend will continue, although it is hard to predict how fast or in what direction. How far apart are the families going to live? Are they going to insist on having separate facilities or are they going to be served by common facilities? How far will the State proceed in taking over from the family those tasks which normally belong to it, such as the rearing of children?

23. The number of bread-winners, including wives, is now greater than ever before in all settlements and is growing fast, irrespective of the rates of development. More and more people are able to abandon their functions at home and work for more productive and more remunerative purposes.

24. The conclusion is that future developments are going to be so fundamental, that they will profoundly affect our thinking, planning and designing. We shall of course have to deal with the eternal and basic needs of land, materials, labour and organizational skill. We shall have to face immediately, however, the pressing demand of contemporary needs. In doing this, we must bear in mind the requirements of the future, the importance of which we can only conjecture and whose exact nature and size we can only expect.

B. FROM THE CITY OF THE PAST TO THE CITY OF THE FUTURE

25. Most of the cities we live in today were built over hundreds or even thousands of years ago. They are really cities of the past. As such, they possess basic characteristics they have inherited from older traditions and they have kept up to now merely because of inertia.

26. The cities of the past have been strongly influenced by the static character of economies, population, and social scale of the past. All these factors today exist in a stage of continuous development and static measures have long since lost their value. The development of the city of the past has been smothered by its own stationary features which did not allow it to yield to normal development.

27. Our people can no longer live in this city of the past. The time has come when designers have to conceive and prepare the ground for the city of the future. The reason we have not realized the need for such a change and have not created a real revolution in our thinking about our cities, is that, by living in our cities, we have developed a narrow perspective regarding their existence. We have come to consider the development of a city as something about which we cannot be concerned.

We take our cities as they were given to us by the past generations and become very hesitant to oppose their existing developmental tendencies or alter existing conditions. This is a wrong attitude. A planner cannot afford to become sentimental about his work without many people suffering the consequences. We have reached the point where we cannot live in our cities any more. We need cities of the future, and the need to conceive them has become a very pressing one,

28. In conceiving the city of the future we must first grasp the nature of the elements involved in the development of the city and visualize their effect in the years to come. We have to consider new problems of population, new characteristics of the urban population increase, new social and technical problems, the role that the machine will play in the future and the effect it will have on our lives, and finally new means of transportation - the helicopter, even the rocket may very soon take over part of the traffic.

C. DYNAPOLIS

29. Yes! The proper name for the city of the future, is Dynapolis, the dynamic city, which in contrast to the static city of the past, will possess the characteristics of dynamic development. That is, the freedom to develop freely and naturally along a planned and predetermined course.

30. In order to understand the city of the future better, we must clearly understand some of the basic principles that should determine its very existence. The first principle demands that planning is comprehensive and includes all social and income groups. Here, we are referring to nations and cities in which everybody is provided for, where privileged groups do not exist and where the inhabitants are considered to be entitled to equal opportunities. This consideration, of course, will not prevent a planner from designing several types of buildings and houses, as well as several types of facilities, depending on the profession and income of their users, since professions and incomes have been accepted as a basis of differentiation by all modern societies.

31. The second principle regarding the city of the future is the freedom to develop dynamically. In the city of the future, the fourth dimension, the dimension of time, must be given greater importance than all other three dimensions. As an element in design time must influence the very basis of its conception, its formation, as well as its physical expression.

32. The third principle concerns the basic structure of the city. It deals with its internal social forces, such as the types of people, their diversified needs, etc., which will affect and interinfluence each other within the city. This aspect leads to the need (now more than any other time in the past) of good organization and order

and a good hierarchy of functions. The city of the future can no longer be built in the haphazard way that the cities of the present have developed, where people and cars, residences and factories, shops and schools are mixed together in a manner that defies order and hierarchy of city structure. The order and hierarchy of functions are indispensable elements for the survival of our cities.

33. Finally, the city of the future has to be built at various different scales. And by different scales we mean the elements that will determine the basic dimensions and proportions of our city. To be more specific, the city of the past was built only at the scale of the human being, whereas the city of the future has to be built at first for two scales - men and cars; later in three scales - men, cars and aeroplanes, the airfield already playing a major role in the life of our cities; and later still in four scales - men, cars, aeroplanes and rockets.

34. Dynapolis, the city of the future, must be designed with due consideration of all these principles and must be conceived and formed on the basis of new rules that these principles are dictating.

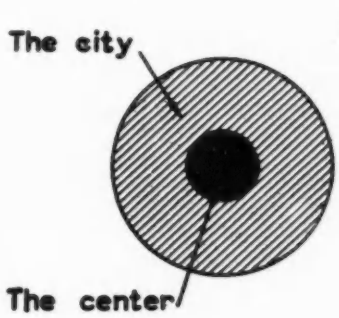
D. THE FORM OF DYNAPOLIS

35. The only way to solve the problems of the city of the present is to conceive a pattern which will permit the natural growth of the city without allowing the new additions to break up the already existing pattern. The dynamic city must by necessity possess an expanding central part arranged in such a way as to be able to expand, without breaking into the other parts of the city. An analysis of all possible forms that a city-center may assume points to a solution that will permit free expansion along a predetermined axis. This axis will comprise the original central core of the city and its new development on both sides and along the central core. Such a city will follow a geographical direction and its expansion will be mainly undirectional (Fig. C).

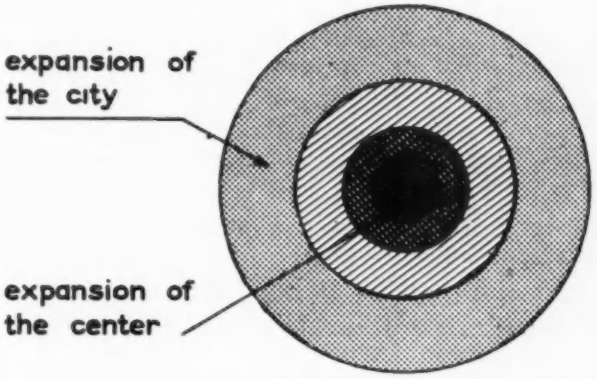
36. If we try to translate the schematic city into concrete geometrical shapes that can be implemented, we will find that the circular shapes must lose their angularity and be transformed into squares and rectangles. This points to the fact that an ideal city should be built on the basis of a rectangular grid system of roads. It is completely out of the question that the rational way of building a city can be based on any other system of roads than that of a rectangular network. The diagonal roads that some cities have at times adopted are rapidly moving out of the picture, as they have never been able to function as initially conceived. The so-called "diagonals" date back from the medieval times and were built for the purpose of military control of the city (the Hausman concept) or for saving transport time in an era when the horse-driven cart was the main form of transport facility.

THE EXPANSION OF CITIES

In the past :



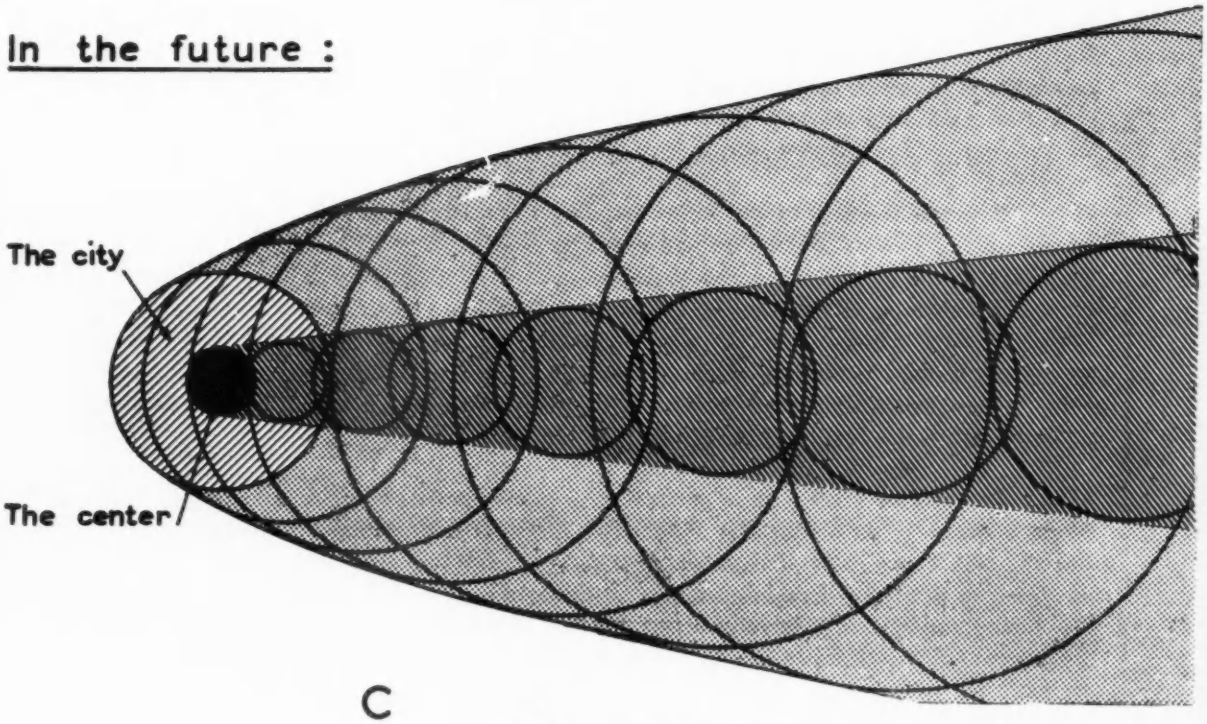
A



B

the concentric expansion strangles the center which struggles with other functions

In the future :



C

the expansion in one direction allows the center to expand without difficulty

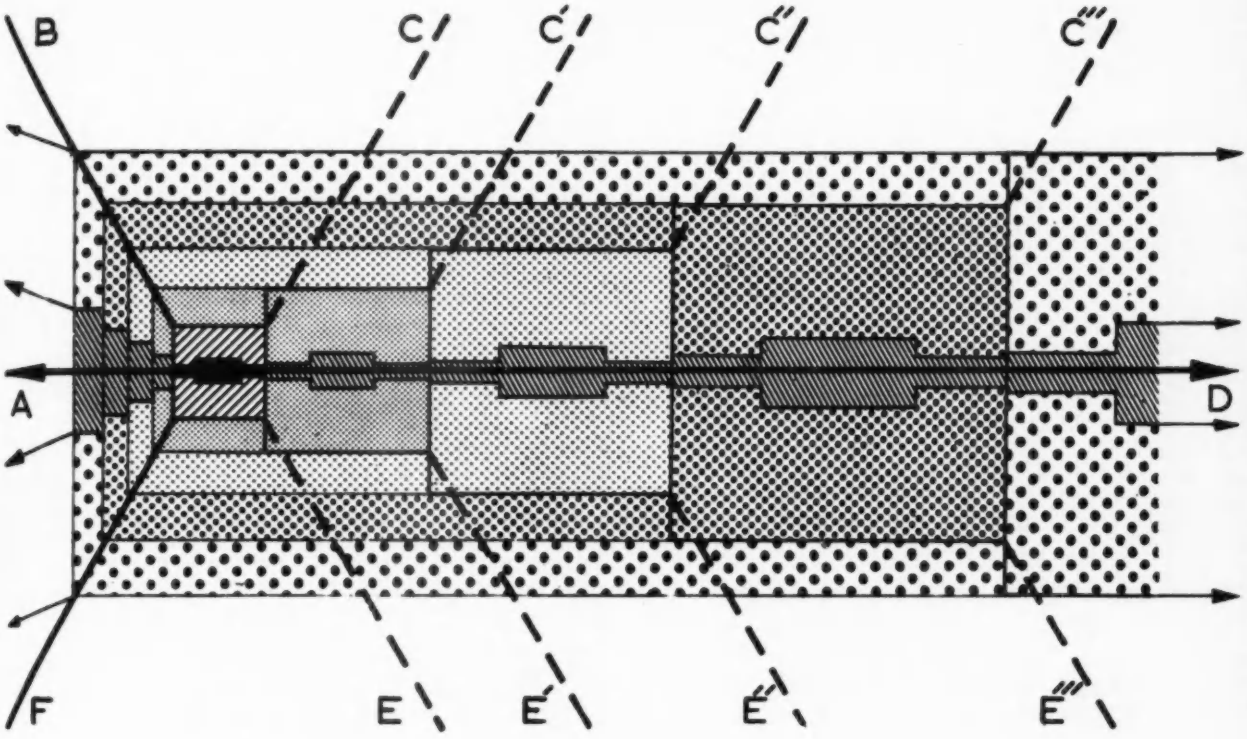
37. None of the above conditions exist any more and, as we move towards developmental thinking, the conclusion is reached that the only road arrangement that can allow a city a free axial development, is the rectangular grid system of roads. Thus, our previous schematic presentation of the city takes the shape shown in Fig. D. (cover).

38. If we now analyse this scheme, we will easily find that there is a certain irrationality in it. Areas close to central parts are not susceptible to development because of the great dynamism with which the city is expanding in one direction only. I am referring to the areas around the oldest part of the city and those around its subsequent centers of expansion. This shows us that our scheme is not as yet ideal. The only instance in which such a scheme would become ideal is the case in which the entrance of the fourth dimension had become so absolutely critical that all previous investment in the existing city could be disregarded and people could have amortized the city of the past generation, or the past decade, in order to move into the city of the next generation or so. This, however, is quite unfeasible for economic reasons, as well as for reasons of speed of growth, and is most unlikely to happen. In view of this, we have to make plans that will balance the design of the quickly expanding Dynapolis with the necessity to use the maximum of the investment already made within our cities.

39. Such considerations lead to the ideal scheme (Fig. E) which shows a city moving and developing dynamically in one direction, while also expanding towards the other three directions and incorporating gradually in its area all previous parts of the city. The difference between this scheme from the previous scheme lies in the fact that the rectangle is primarily expanding at a much greater speed in one chosen direction, while it is also expanding at much lower rates in the other three. Thus, Dynapolis, besides its undirectional movement also possesses a well-balanced development all around.

40. Whether the city of the future is going to be more like D or E, depends mainly on the rate of growth of the city and the rates of growth of its economy. If the rate of growth of the city is large and in accordance with its economic growth, then the city will tend to be more like D. If, however, the rate of growth of the city is very large while its economy does not grow in proportion, the city will tend to be more like E. As there are many retarding forces of inertia within a city that influence its economy, it is much more probable that the cities of the future will acquire an E type of development, at least within the foreseeable future.

41. The city of the future is conceived as a city built and developing at various rates along a system of perpendicular axes. This systematic development, however, has to become an integral part of the overall area around the city and, from a planning point of view, to the overall development of the whole nation, based on a system of hexagonals. The hexagonal system is beyond doubt the best and most economic pattern for the organization of space and the interrelation of settlements among themselves.



F

First Conclusion — Highways A and B shall remain stationary inside and outside the city.
Highways B and F may remain stationary outside the city but will be relocated inside the city.
Highways C and E shall be carefully relocated along with every expansion.

Second Conclusion: The sides of the main sectors and their incidence with the highways shall develop 30°— 60° triangles

Third Conclusion: If we want to have the same breadth to width ratio in the development of our sections, we have to add on each side the regular multiples of new sectors imposed by the above triangular relation.

42. In the overall developmental scheme of our cities, we must take into consideration the development of the proper highway pattern which will ultimately beneficially influence the development of our cities.

43. Figure F (Plan 11) shows an A-D axis along which the main development of the city of the future takes place. At the initial stage this axis is connected with the area around it through axes A, B, C, D, E and F.

44. The major expansion takes place mainly along the A-D axis on side D. The first phase of expansion will be a transfer of axis C and E to the new positions, C' and E'. A second expansion affects a movement of these axes to new positions, C'' and E''.

45. Such a pattern of expansion indicates that highways A and D must not suffer any major relocation, as they are on the main axis of development. Highways B and F may remain stationary outside the city. Within the city, however, due to expansion, the relocation of highways B and F is imperative and inevitable.

46. Axis C and E will change position along with every expansion. Such an expansion pattern indicates that the sides of the basic sectors of the city and the direction of the different axes assumes an angular pattern with angles of 30° and 60°.

47. This again means that if we want to keep the city divided into sectors of similar shapes we have to provide for expansion that follows the rules imposed by the hexagonal pattern of the triangles mentioned above.

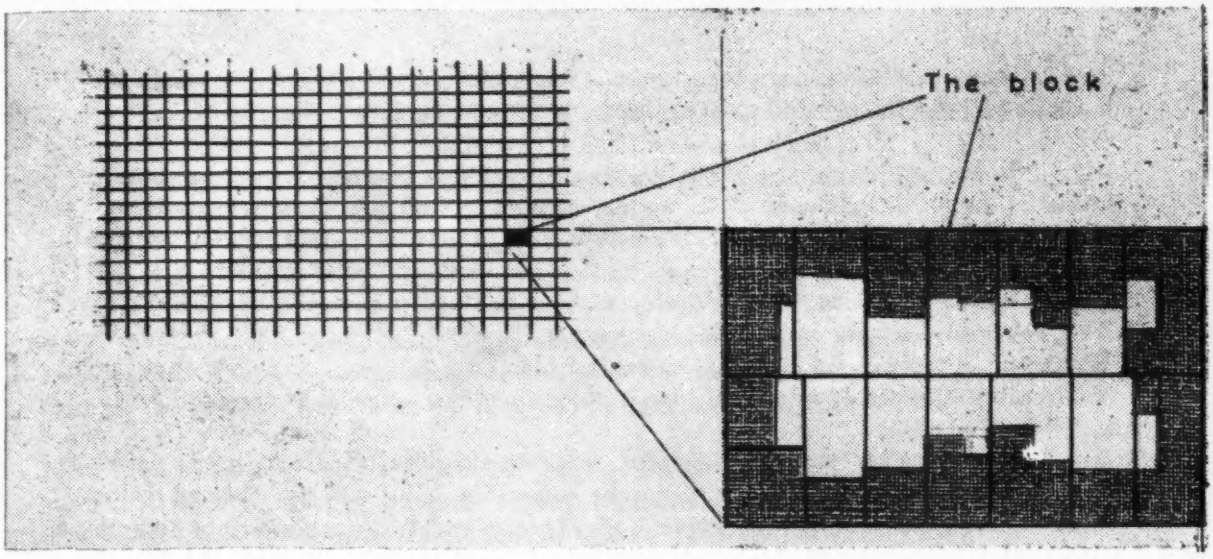
48. In the city of the future, the old-fashioned blocks will be replaced by sectors which will comprise groups of buildings of related functional use, to a certain degree self-sufficient. The reasons are very apparent. The change of scales and the introduction of the machine has changed the very structure of the cities and has made the block too small for the city of the future. Within the sector, the new unit of the city of the future, we shall have mainly movements of people, with limited access for cars, whilst outside and around it the cars shall be able to move freely and at relatively higher speeds, providing transportation among sectors and between the sectors and out of town points.

E. HOW TO REACH DYNAPOLIS

49. After establishing the basic characteristics of Dynapolis, the city of the future, we are faced with the question of how to proceed towards this ideal, if not how to reach it. In this respect, we have to recognize that we are faced with the case of the new cities to be created right from the start and the case of the existing cities that have

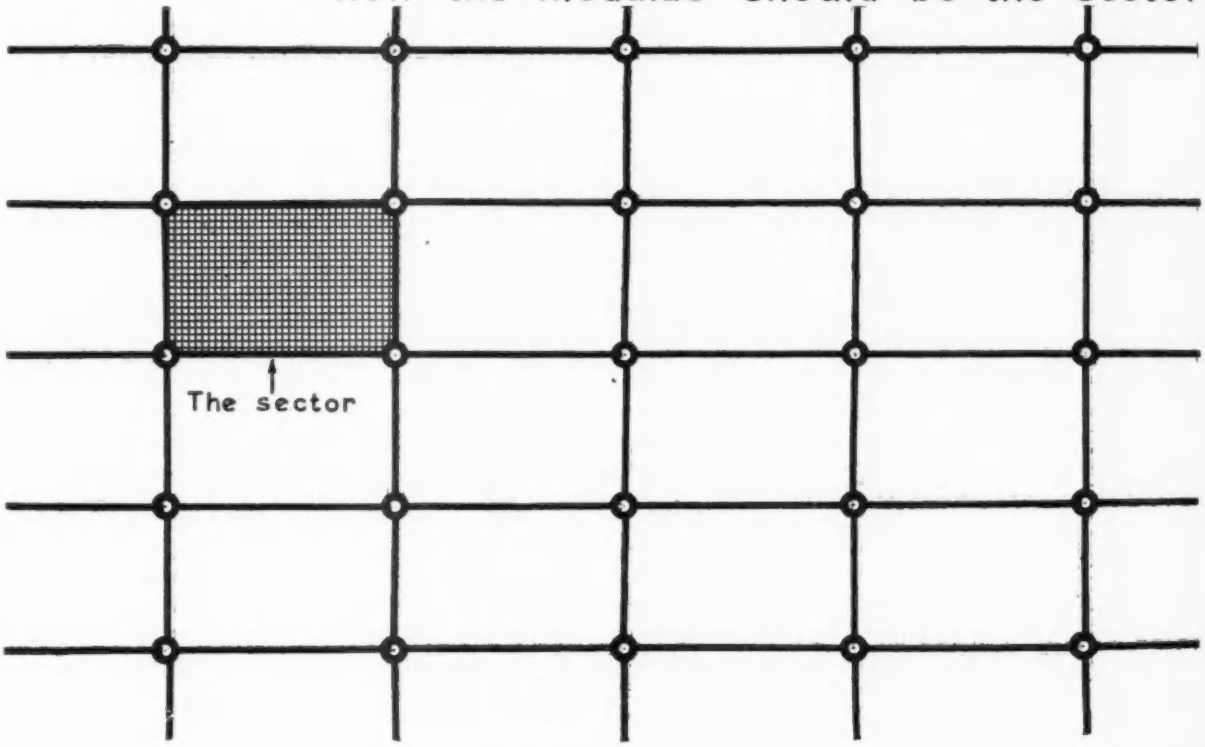
THE OLD CITY

here the modulus is the block



THE NEW CITY IN THE SAME SCALE

now the modulus should be the sector



The scale in our city planning has changed. Thus the basic element which used to be the city block is now replaced by the community sector.

to be transformed into cities of the future. The latter are overwhelmingly greater in number than the former.

50. In the case of existing cities we have the problem of transforming them into cities of the future. In some cities we may be able to find already existing patterns similar to that of Dynapolis. This is possible even in very well-developed cities. In these cases we may be given the chance to create a central sector as the core of our new city, which will be free to develop without hurting the structure of the old city. This was possible in the case of Washington, D.C. which, although a big capital, had by chance left the sector south of the capital along the Potomac, free, and thus we could apply the free development idea of the city of the future in Washington.

51. There may be instances, however, where the chances of affecting free development along one axis within the city may be impossible. This will probably be the case in such larger cities as Moscow, New York, London and Tokyo. We cannot hope to find within these cities a completely non-built up sector which could play the role of the expanding central core. A solution in this case may be affected by starting the development of a central core at the outskirts and following the development along the axis of the city. Such solutions have been in the past discarded because of a widespread conviction that large cities have reached their maximum of development and are destined to decay. This is false. The decay of our cities is not a matter of size but of an irrational development. We must always keep in mind that we are not at the end of an evolution, but just at the beginning of one.

52. Small cities or minor city centers, even those built in a very compact way, may be saved for the future if we act now. The right move in this case would be to plan their development soon. And it should be such a development as to allow them to follow the pattern of free expansion over generations and centuries.

53. In all cases the proper solution can only be found if we don't consider the ideal city pattern described above, as a pattern to be copied, but as a vision to be inspired by in our new conceptions for the future. In all these cases our success will largely depend on our will to plan for development. To acquire that creative passion, we must first believe for ourselves that we are not at the end of an era, but at the beginning of one. We must fully realize the consequences of letting our present cities develop to become two, three, or ten times bigger in the future than they are now, without previously providing for such an expansion.

54. Only the introduction of the perspective of time into our plans for the future, can save our cities from an unpredictable strangulation and decay. Only Dynapolis, the dynamic city, can be considered the ideal scheme for the city of the future.

Hoyt, Homer
THE STRUCTURE AND GROWTH OF AMERICAN CITIES CONTRASTED WITH THE STRUCTURE AND GROWTH OF EUROPEAN AND ASIATIC CITIES
"Urban Land" Volume Eighteen, Number Eight, September, 1959.
Illustrations. 8 pages.
711.42 (73)(4)(5)

1. In this article, Dr. Homer Hoyt, land economist and market analyst of Washington, D.C., draws upon his knowledge of the structure of American cities to contrast the physical pattern he has observed in European and Asiatic cities.

2. Social science seeks to attain the goals of the physical sciences in discovering and formulating laws of universal validity. In the analysis of city growth and structure we seek for principles that can be applied to every urban community on the globe. There are indeed some rules that govern cities everywhere. Every urban community must have an economic base; it must produce something for export outside its boundaries, or perform services for the outside world to pay for the food, raw materials and manufactured products which it does not produce itself. In most urban settlements, the middle or higher income classes usually live in one or more sectors of the metropolitan area. Cities in all countries expand either by central or axial growth.

3. Six Forces Affecting American Cities. While these general rules may be observed in all cities, there are factors in city growth and structure which are the result of our own historical evolution and do not operate with the same force anywhere else.

(1) Transportation. Our cities took their present form and shape during a succession of dynamic advances in transportation which caused shifts in the location of commercial, manufacturing and residential land uses.

(2) Immigration and Internal Migration.

(3) Steel Frame Skyscrapers and Elevators.

(4) Desire for Single-Family Detached Homes.

(5) Widespread Distribution of Wealth.

(6) Universal Ownership of Automobiles.

4. In the cities of the United States there is a sharp cleavage between the major land uses--residential, retail, business offices and factories. These uses are usually not intermingled and it is the policy of zoning laws that have become widespread in the United States in the past thirty years to keep them separate. American families typically live in a residential community consisting almost exclusively of single-family detached houses; they shop in a district given over entirely to stores, and they work in specialized office or factory districts. To be sure, they are non-conforming uses--little stores in some old residential areas, factories in some old tenement areas, and some offices in old apartment buildings, but this intermingling is frowned upon by zoning officials, who seek to remove gradually a use not in harmony with the neighborhood. There are of course borderline areas between commercial, industrial and residential areas, but there is usually the attempt to provide buffer strips between these different uses.

5. The Pattern of European and Asiatic Cities. Now contrast the structure of American cities with the great cities of Europe and Asia. Most European and many Asiatic cities were originally walled cities, an effective defense against attack before the air age. Consequently they developed in a compact manner, characterized chiefly by central growth. Apartment living became the accepted mode. As a result of the dense development, numerous small shops could depend upon the trade of families living in flats above them or around them. There was an intermingling of uses. Shop owners lived in the rear or over their stores and small factories were everywhere in residential districts. There was a great gulf between the kings and nobles and the majority of the residents. However, dwellings were usually surrounded by walls with life centering around an interior court, or the apartment block had an interior court, so that a high income family or noble family could live in a poor neighborhood and be independent of its surroundings. The foregoing is a very brief description of the early predominant pattern outside the United States. Now the vital question is--to what extent have these cities been changed by the impact of the automobile and modern inventions?

6. Apartments. Everywhere the chief new construction is in the form of apartment buildings or "flats" and not single-family houses, because living space can be provided in an apartment at lower cost than in a single-family houses. The apartment living space, consisting of one to three rooms and kitchen depending upon the income of the tenants, is of course less than that in a single-family house. There is also economy in apartment construction, as the same roof covers a number of flats and there is economy in a single stack of sewer and water lines. Of course the apartment building occupies far less ground per living unit than the detached single-family house, permitting a price to be paid for the land that is high enough to cover the cost of removal of old buildings. However in foreign cities, apartment buildings are the prevailing mode of construction, even in small towns and suburbs. There is sharp demarcation between city and country. In foreign cities apartment house clusters are adjacent to open country. As a result of

the concentration of population in apartments, it is possible to provide frequent and cheap mass transportation facilities. This also causes central business districts to flourish and enables thousands of small shops, depending upon customers living over or near them, to eke out an existence.

7. Increase in Population in Foreign Cities. Urbanization appears to be increasing everywhere. This has been noted in articles in EKISTICS 8:47, 8:48, and 8:50. The capital cities particularly, have shown recent rapid population gains. In nearly all of these growing cities outside of the U.S. the new housing is provided in the form of apartment units in the central city or close-in suburbs.

8. Office Buildings. Cities in Europe and Asia do not have high office buildings to the same extent as in the U.S. A 20 story office building in Naples and a planned 50 story building in Paris are exceptions. There is often an intermingling of offices, shops and residences near the downtown area.

9. Retail Stores. The predominant form of retail store in Europe and Asia is the small shop. There are 65,000 shops in Old Delhi and New Delhi alone. The exceptional cities with large department stores are Tokyo, Kyoto, Paris, Cologne and London. Calcutta with its 6 millions has no large department store; neither have Hong Kong, Athens, Manila, Bangkok, nor most other cities of 1,000,000 population or over.

10. Overall Appearance of European and Asiatic Cities. Despite new construction, most European and Asiatic cities retain their original form created by royal power. Their palaces, cathedrals, temples and museums still dominate the skyline. There is no zone of transition, no large in-migration of foreign races. Old historic buildings have been gradually renewed or shored-up on their original plan. New apartments are built in downtown areas where the site is available. Thus European and Asiatic cities have a stability of form which has endured for centuries that is lacking in American cities.

11. In the United States, we cannot fully equal achievements which required centuries for their realization. Our millionaires have bought art treasures for the Metropolitan Museum, for the National Gallery of Art in Washington and other art collections, but they cannot buy paintings and sculpture which are not for sale at any price. The U.S. can, however, make its central areas more attractive by making them places of recreation and culture as well as of shopping. The Ginza district of Tokyo, combining features of Times Square and Fifth Avenue, is brilliantly lighted at night, and with its theatres, air-conditioned malls, and restaurants, attract thousands of evening visitors in a holiday mood. We could do something to liven up our central business districts, which at night are often dark and deserted, by adding some of the attractive entertainment features of Japanese and European cities.

12. The urban redevelopment laws in the United States, with the power of condemnation for areas in which the majority of structures are obsolete or deteriorated, has paved the way for large scale rebuilding of central slum areas in American cities. A new pattern of office buildings with ample space between the structures has already been created in the Golden Triangle of Pittsburgh, in downtown Detroit, and is being planned for the Bunker Hill area in Los Angeles. Large new apartment projects in park-like surroundings have risen on the South Side of Chicago and in Southwest Washington, D.C. New central shopping districts are planned for New Haven, St. Paul and other cities. In London, Cologne, Naples and Tokyo, the bombed out areas have been rebuilt mainly on the old pattern. New modern buildings have replaced old structures, but the desire of property owners to preserve the land values caused rapid rebuilding on the original street layout.

13. Can any of the experience of European or Asiatic cities be applied to American cities? In addition to improving our downtown areas as suggested, more emphasis could be placed on apartment living. Already there is a pronounced trend toward apartments in the United States, as the number of these units built in 1958 increased by 40 percent over 1957. Apartment builders can afford to buy central locations near shops and offices. The time, effort and expense of travel from home to work and shops can be greatly reduced. Also, the upkeep work of lawn mowing, house repainting and painting of the single-family house can be eliminated. The ownership of the single-family home will remain for a long time the cherished accomplishment or the goal of the average American family with children. In many cases it is a necessary sacrifice to provide a proper environment and school facilities for growing youngsters. However, there could be a greater emphasis on apartment living for families whose children have grown up and gone to homes of their own or for couples without children. The demand for apartments could be stimulated by selling more of them on a co-operative basis, in which the buyer is responsible only for his own unit and does not have a contingent liability to pay for vacancies in the building.

14. From the foregoing analysis, it appears that many principles applicable in American cities would not work in European or Asian cities. Conversely, methods and rules operating there could not be successfully transplanted here. A widespread ownership of automobiles and the growth of a middle class could promote the American type of suburban residential growth with outlying shopping centers in other countries. This pattern is already taking place in San Juan, Puerto Rico, and it will probably be realized in West Germany, where there is a growing middle class and an increasing private ownership of autos.

Grey, Arthur L., Jr.
LOS ANGELES: URBAN PROTOTYPE
Land Economics, Volume XXXV, Number 3, August, 1959, Pages 232-242
711.433 (73)

1. Arthur L. Grey, Jr., Associate Professor of Economics, University of Southern California, presents Los Angeles as a model for the twentieth century auto-oriented city. In the rapid urbanization taking place throughout the world, the shape of these giant new cities is just now being molded. Thus, this study of Los Angeles has relevance in the understanding of one urban form.

2. In the U.S. at large Los Angeles has long been considered unique. The picture is in part a myth, nurtured by local boosters for self-interested and romantic reasons and by people in other parts of the country who may take consolation in this delusion. A national magazine has devoted an issue to what it called, "The Astounding World of Los Angeles." This popular characterization obscures the larger significance that Los Angeles has for all cities. The fact is that the formerly distinctive features of this area foretold what have become widespread urban trends.

3. One reason for this is that Los Angeles' rapid and continuing growth has provided a fertile and demonstrative field for innovations of all sorts. Bogue has pointed out that "the Los Angeles area has grown faster during each decade since 1900 than the Standard Metropolitan Areas of its size and class in the Nation."[1] From 1900 to 1950 Los Angeles' population increased 2,199 percent while during the same period the average growth for the fifty-seven principal Standard Metropolitan Areas in 1900 (including Los Angeles) was 160 percent. Under these circumstances physical changes which might be of minor proportions in other localities have readily emerged as the prevailing mode in Los Angeles.

4. The Means of Passenger Transportation. Another consideration is the fact that Los Angeles is pre-eminently a product of the automobile age. If we were to identify any single variable as being of the most significance in determining the essential points of difference among our cities it would be the dominant means of transportation during the period of major population growth. The salient features that distinguish the physical development of Los Angeles had their genesis to a large extent in the decade of the 1920's. This was a period of rapid population

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[1] Donald J. Bogue, Population Growth in Standard Metropolitan Areas, 1900-1950; With An Explanatory Analysis of Urbanized Areas (Washington, D.C. Housing and Home Finance Agency, December 1953), p. 56.

and economic growth for the area. Some 418,000 new homes were built in Los Angeles city. This more than doubled the existing housing stock. Most significantly, by 1930 the percentage of the country's automobiles within Los Angeles County was nearly twice the proportion which the area contained of the country's total population.

5. The question arises of why the Los Angeles area had an unusually high ratio of automobile ownership; of why automobile usage developed on a more generous scale earlier than elsewhere. Among the answers are such factors as the minimum of restraint imposed upon the direction or extent of new growth by topographical conditions and the mild climate which made all-weather operation of the automobile feasible. There was the antecedent development of streetcar lines which themselves dispersed development in Los Angeles. Street railway development in many localities furthered land subdivision and development, and in Los Angeles this was markedly the case.

6. The point is, then, that Los Angeles started out like other communities (at least in respect to those considerations that are important to our present analysis) but that at an earlier date than in any other large metropolitan area, and in very many of the smaller ones, the automobile became a dominant element in local passenger movements. In this respect as much as in others, the trite "colossal" of the oldtime Hollywood movie moguls characterizes the scope of the developments that have taken place in Los Angeles.

7. Decentralization: Residential and Commercial. The swing in new construction to the single-family house which dates from the early 1930's doubtless can be traced to a coterie of forces, including the influence of the federal programs in the home financing field and rising levels of personal incomes. A decisive factor also has been the trend to the suburbs made possible by the automobile. In Los Angeles, vast new suburbs have grown up without practically any public transportation whatsoever.

8. The developers house was the symbol of the move to the suburbs which resumed on a greater scale than ever before in the latter 1940's after the interruptions of depression and war. A more recent phenomenon has been the development of the suburban shopping center as the logical companion of the outward migration of people. In Los Angeles this trend has been carried to near saturation for present levels of population and purchasing power. Besides the seemingly numberless smaller centers the main attraction of which is a food store or perhaps a "junior" department store, there are more than a score of so-called "regional" shopping centers which account for 38 department stores opened between 1945 and 1958. The impact of shopping decentralization upon downtown Los Angeles has been cushioned by the very rapid rate of local population growth. The magnitude of the shift away from downtown is disclosed more fully in the fact that during the same period the increase in retail sales throughout the whole Los Angeles Metropolitan Areas was over 50 percent. Retail decentralization has had telling effects over a much longer time in Los Angeles than elsewhere. For nearly 25 years sales totals for downtown department stores have been following a downward trend and in the period 1946 to 1957 the decline has amounted to 30 percent.

9. The author is mindful of a contrary opinion expressed by Francis Bello that "every city" is not necessarily destined "to look like Los Angeles. Los Angeles had no vital central core to begin with." Bello exaggerates the fairly subtle differences which distinguished Los Angeles at an earlier date when he asserts that "the core never developed, despite a fine electric railway system in the early years, because the automobile arrived too soon and splattered the city over the countryside." [2] In point of fact, downtown Los Angeles has been an important center and only since World War II has the decrease in its importance been precipitous, as figures on department store sales, for example, indicate. In the space of the 12 years beginning with 1946, the downtown share of the Metropolitan Area sales volume has been more than cut in half, from 44.8 percent to 19.6 percent.

10. Disorganized Growth and Destruction of Open Space. In the quest for living space we have created a pattern which has unnecessarily removed open space further and further from those who dwell in the cities. For many years Los Angeles County had such a commanding lead in agricultural production that the statistics failed to fully reflect the rate at which citrus groves, truck gardens, and dairy pasture were being converted into suburban lots. Recently, however, the county has been nudged from its position as first-ranking county in value of agricultural production in the nation and has fallen to third place. To some protagonists of urban "progress" this process of substitution may appear clearly as a gain, but this is to place no value on the quality of urban life, only on the quantity.

11. Industrial Dispersion. A concomitant of residential and commercial decentralization is, of course, a similar development in manufacturing. The various factors cited as determining the choice of location by manufacturing firms suggest a number of reasons for recent decentralization, viz., availability of sites of suitable size, lower land prices, lower local taxes, zoning and other regulations, more tractable labor. These differential opportunities to business are more readily exploited, depending upon the extent to which the level of development of the highway and street system minimizes space friction. Whether or not such dispersion is economically desirable on broader social grounds as well as to the particular units making their locational decisions, depends upon the totals of costs and benefits to business and sustained indirectly by the society. The development of greater mobility of the factors of production through transportation improvements and the consequent widening of choice of location by various enterprises may or may not prove a social advantage. An analysis of industrial locational decisions within the Los Angeles area indicates

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[2] "The City and the Car," The Exploding Metropolis (Garden City, New York, Double Day and Company, Inc., 1958), p. 57.

that in most cases the disadvantages of the selected site were ignored at the time of decision or discovered later. For all firms, around 20 percent reported subsequent dissatisfaction with their choice of site, the proportion being higher for smaller firms.[3]

12. General Observations and Conclusions. Why is Los Angeles the prototype of decentralization and why have these features assumed importance first in this community? To be sure there are other, and probably unassociated, causes, but the most distinctive and determining consideration has without question been the unusual importance of the automobile. The discussion on the foregoing pages indicates that these ingredients disposed Los Angeles toward a high and early incidence of automobile usage:

a. The modest dispersion of growth and development which ante-dated widespread use of the automobile for the reasons cited.

b. The consequent receptiveness of the community to the introduction of automobile use.

c. The subsequent great population growth which has been accommodated by dispersed development primarily oriented to automobile transportation.

d. Events also show that the trend toward decentralization has been accelerated by the growing differential between the increments of new capital flowing, respectively, into the improvement of streets and the transit industry since the early 1900's.

13. It may be that the automobile, as we know it and for the purposes for which it is presently used, is already obsolete and that the present period of enormous effort to make over our physical environment in order to get along with it is merely an interlude, that the secularly increasing pressure of urban population and advancing technology will surely dictate new principles of urban organization for the future. In the meantime, the delayed effects of the automobile revolution coming out of Los Angeles and pervading the rest of the country, including the problem of smog which is becoming increasingly ubiquitous, will continue to challenge the best efforts of planning. The Los Angeles region demonstrates great significance as the progenitor of urban change throughout the United States. If the tendencies manifest in the Los Angeles area were better understood, this would be tantamount to developing a science of urbanism and a substantive basis for public policies addressed to the improvement of the quality of life in the metropolitan areas which increasingly comprise the typical human ecological setting in this and other countries.

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[3]Hadley E. Smith, A Review of Plant Location Theory and a Questionnaire Study of Plant Location in Los Angeles County (unpublished M.A. Thesis, Los Angeles, University of Southern California 1954), p. 61.

MacEwen, Malcolm

MOTROPOLIS: A STUDY OF THE TRAFFIC PROBLEM

The Architects' Journal, Nos. 3363 Vol. 130, October 1, 1959.
Pages 254-275. Illustrations.

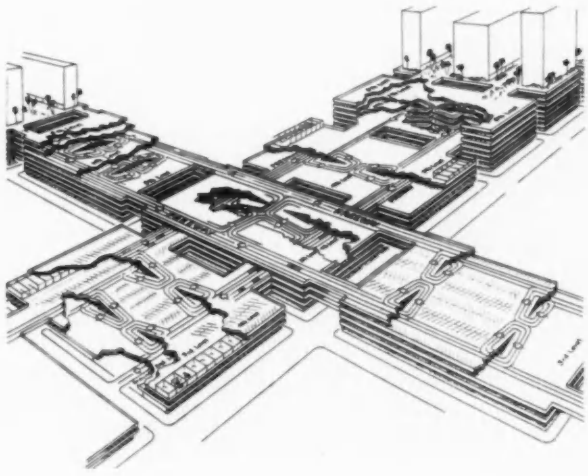
656: 711.41 (100) (73)

1. Is Motropolis, the motorized city, going to be dominated and destroyed by the motor, or is it to be a city in which civilized man lives a civilized life, using the motor vehicle sensibly and economically as a tool for mobility? One of the most useful and efficient tools ever invented is today being used wastefully and destructively. Politicians, administrators, engineers and planners, even architects who are alive to the aesthetic implications of the disrupted city, are apparently blind to the immensity and complexity of the problem the motor vehicle raises. In this article Malcolm MacEwen offers no cut-and-dried solutions, because research and clear thinking about Motropolis must come first. American experience shows that the attempt to solve traffic congestion merely by spending money on roads is a bottomless pit, and questions whether any solution can be found if public transport is allowed to be squeezed almost to death, and rely excessively on the private car for personal transport. Malcolm MacEwen also foresees disaster if traffic continues to be treated as primarily an engineering problem. It is, he believes a planning problem, to be attacked from many sides by a diversity of skills; and the architect, because he cares for cities, can contribute much in the struggle to control the powerful destructive forces embodied in the motor car today.

2. If American experience offers no solution, is one to be found in any of the innumerable plans and theoretical exercises that have been made to provide for highly motorized cities? Certainly, little guidance is to be found in the British development plans which have been crippled by restrictions on capital expenditure and out-of-date thinking. Many road plans have been lying in pigeon-holes for 20 years or more. What can be said with certainty is that completely new physical forms, new planning and architectural solutions are required for any plan which attempts to provide a complete solution for a highly motorized city--complete in the sense that not only does the through traffic flow, but fully civilized conditions are restored for all human activities, within an aesthetically satisfying environment, that would end the lethal conflicts on the street. In an existing city this would mean reconstruction, because the problem is not merely to enable traffic to circulate on the main highways, but to enable the motor vehicle to penetrate to, and to serve, every building in the city. An essential ingredient in any workable solution is the exploitation of two or more levels to provide the extra space that motor vehicles in large numbers require. Five such proposals are outlined in this and the following articles: (1) Victor Gruen's Fort Worth Plan, (2) 2-Level Plan for Berlin, (3) Mall in Kalamazoo, (4) LeCorbusier's Plan for Algiers, and (5) Motopia.

' Here, nestled under its blanket of smog, girdled by bands of freeways, its core eviscerated by concrete strips and asphalt fields, its circulatory arteries pumping away without focus, lies the prototype of Gasopolis, the rubber-wheeled living region of the future. . . . When Lincoln Steffens went to the Soviet Union just after the Bolshevik Revolution he proclaimed " I have seen the future—and it works." Today's visitor to Los Angeles might paraphrase Steffens and say " I have seen the future—and it doesn't work." '

Harrison Salisbury, New York Times, March 3, 1959



The ultimate logic of planning for the private car as the primary means of personal transport is expressed in this plan (above) for Los Angeles by E. M. Khoury and Associates, consulting engineers, Los Angeles. The air view (opposite page) looking along the Harbor Freeway from the opposite direction, shows the central business area as it is today, with two-thirds of it given over to parking lots. Unlike Victor Gruen, the designer of the Fort Worth plan, who aims to restrict urban sprawl, Mr. Khoury believes that it cannot and should not be contained. He plans for the time when Americans can commute from as far as 300 miles away, possibly on moving belts that may supplement today's freeways in the coming Nuclear Age, and drive their cars to within a block of their offices. His basic principle is to " knife through " the urban areas with elevated motor roads in two directions in a grid located at four block intervals and superimposed on the existing streets, which would continue to function, thereby supplementing the existing street traffic system with another completely independent traffic system in the central business districts. The photograph shows his motor roads running through new and existing tall buildings, within which one or more levels are used for motor roads, free-flowing and void of traffic lights, and up to eight levels for parking, with office buildings and pedestrian walks above. The cut-away drawing shows a 4th floor motor road in the wide block and a 5th-floor motor road in the narrow block. The plan illustrated here will ultimately have parking spaces for half a million cars and can, it is claimed, circulate two million cars in any 24-hour period. There are no ramps in the parking areas, the cars being driven from one floor to another by an ingenious use of warped decks in the centre of each block.

3. Fort Worth's Achilles' Heel. Victor Gruen's abortive plan for the centre of Fort Worth is regarded as one of the most advanced plans yet devised for a motorized city. It girdles the centre with a vast motor road, turning the centre into a pedestrian precinct penetrated only by parking garages and loop-roads for motor buses. An essential and costly feature is the construction of under-ground roads for truck deliveries to all buildings. Yet even this plan is only workable on the assumption, which he makes, that the American motorists will switch in large numbers from their beloved automobiles to public transport. Gruen provides central parking space for 60,000 cars for a city of 1,200,000 (10,000 more than the number of cars parked daily in central London!), but even so he assumes that half of all the people now travelling to the centre by car will do so by express bus. As only 17 percent of them travel by bus today, Gruen is assuming that the number of people using public transport will be trebled.

4. Conclusions. Some conclusions to which Malcolm MacEwen's detailed study of the problem follow.

(a) The attempt to use the private car for all, or nearly all personal journeys presents town planning and architectural problems for which no workable and acceptable solution has yet been found.

(b) No solution is likely to be found unless full use is made of a modernized public transport system for the mass movement of people in cities.

(c) No solution is going to be cheap, quick or easy, but the right solution, even if it is dearer at first, will be cheaper in the long run.

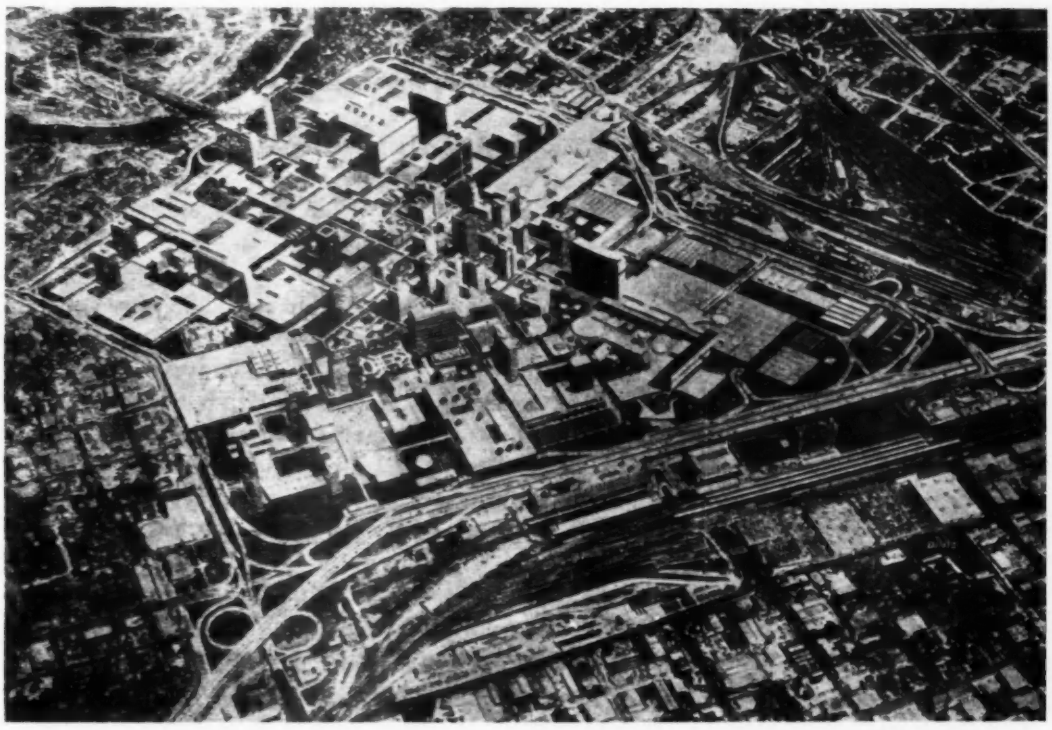
(d) A great research programme, not confined to ascertaining existing or projected traffic movements, must precede any large-scale road programme.

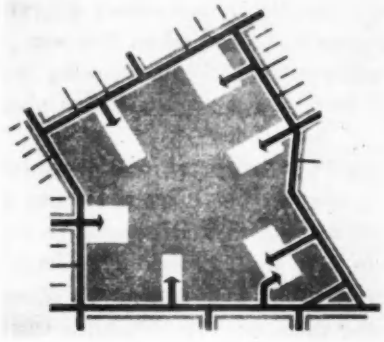
(e) Traffic is a planning problem.

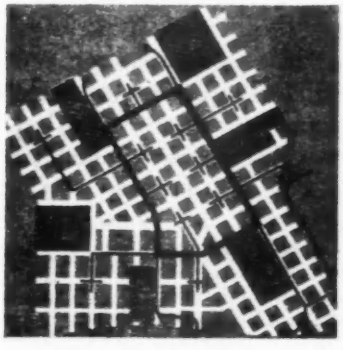
(f) Solving the traffic problem is a team job, in which the architect must play his part from the start. It is not the job of any one profession or skill.

(g) The problem must be attacked simultaneously from several directions. The means employed will include the creation of a new communications system, and a more rational location of land uses.

(h) The price of freedom for everybody to use the motor vehicle is some restriction on its selfish, unreasonable, or wasteful use by individuals.







The plan for downtown Fort Worth, by Victor Gruen and Associates, was the first for any city based on a scientific assessment of future traffic volumes. The solution was to turn the entire downtown area into a pedestrian island, surrounded by a vast ring road, penetrated on the surface by six parking garages, and loopways for buses, and served below ground by a one-way tunnel loop with spurs servicing every block. It was assumed, not that everybody would travel by car, but that the proportion of commuters using rapid public transport would rise from 17 to 50 per cent. Diagrams show (left, top) six parking garages directly approached from the loop road and (below, left) the underground one-way tunnel with spurs servicing each block.

Boissevain, Osmond, Johnson-Marshall, P. and Buchanan, C. D.
A PLAN FOR A TWO-LEVEL CITY
The Architects' Journal, No. 3363 Vol. 130, October 1, 1959.
Pages 285-287. Illustrations.
711.41 (43)

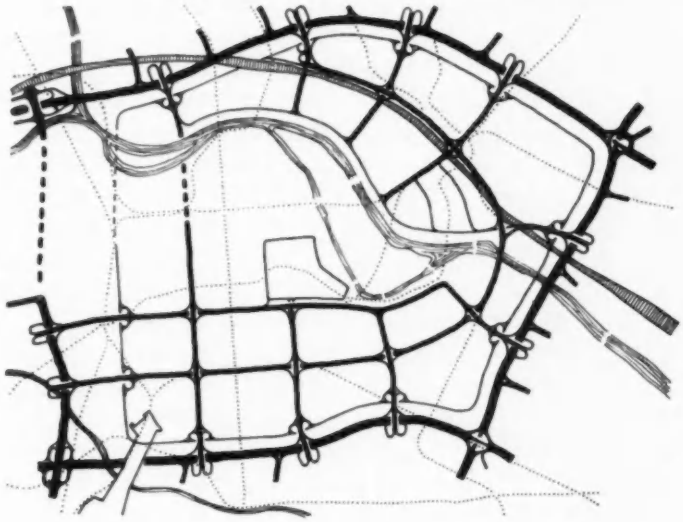
1. A competition for replanning the centre of Berlin, held in 1958, provided exceptional opportunities for a radical approach to a solution of the traffic problem in a blitzed metropolis. One of the British entries, by Messrs. Boissevain and Osmond with Percy Johnson-Marshall in consultation with Colin D. Buchanan, proposed to create a civilized environment within which the pedestrian could walk the length and breadth of the city centre on an elevated platform without encountering a motor vehicle, and the vehicles could circulate or park with complete freedom on ground level.

2. It seemed to the authors of the plan that the possibilities of dealing with motor traffic in a large city centre by means of so-called one level "precincts" were strictly limited even allowing for the concentration of some movements into public transport in the form of buses and underground railways. In conditions of heavy motorization conventional precincts become overwhelmed by their own legitimate traffic, and the precincts bounding roads become torrents of vehicles effectively preventing communication between precincts. One consideration stood above all others and that was to restore civilized conditions for the pedestrian, and when this was pursued in earnest it soon became clear that the only certain method of achieving it was by elevating the whole of the pedestrian circulation above the vehicular circulation.

3. This not only avoids all the savage conflicts with vehicles in which the pedestrian is involved in on-the-level arrangements, but it also releases a great deal of space for vehicular use. No great amount of argument is needed to show that more space is one crying need if the motor vehicle is to be accommodated in city centres and there is sense in seeking it in a vertical rather than a horizontal direction. Thus was evolved the first principle of the plan--to give over to vehicular traffic virtually the whole of the ground area, and to build the city above and to some extent beneath the vehicular plane.

4. The comprehensive plan of development blocks and highways is shown in Figure 3. The system is contained within a ring road linked to main arterials radiating out of the city. Intersections of the central roads with the ring road are necessarily elaborate, but the intersections at the four corners of each development block are fairly simple. It is virtually impossible to devise a plan which does everything. There has always to be a sacrifice of some kind, and in this case the disadvantage is that development blocks can only be circumnavigated in a clockwise

Fig. 1. The main road pattern for central Berlin in the scheme by Boissevain and Osmond, with Percy Johnson-Marshall and C. D. Buchanan. Pedestrians can circulate throughout the central area on a first-floor podium. The plan for a typical development block is shown in Fig. 3. The main line railway runs E.W. north of the river. Underground railway in dotted lines.



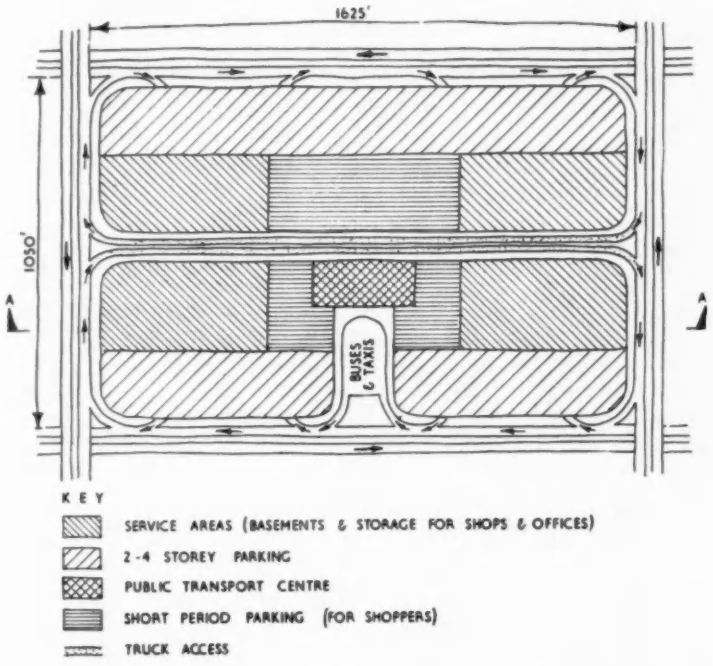


Fig. 3. A typical development block, approximately 50 acres in extent, at ground level showing how the traffic circulates round the block in the reverse direction to that followed in a normal roundabout (traffic is shown observing the German rule of the road: in Britain the flows would be in the reverse direction), entering the block from the slow lane. The plan is diagrammatic only. Section A-A on page 287.

direction and so travel from one block to another may, depending upon the point of starting, involve a journey right round a block instead of a simple movement across the street. The ground level traffic arrangements for a typical block are shown in Figure 3, which also shows the connections to the main road. A development block would be of the order of 50 acres, would contain space for some 10,000 parked cars, and might support a day-time population of 20,000 people. Figure 4 is a cross-section of a typical block.

5. Finally, there is the question of the applicability of the system to existing cities. It is obvious that it calls for the technique of comprehensive development which is already embodied in planning legislation. By this means an area of urban decay and blight large enough for at least one of the basic units would be designated, acquired, cleared, and rebuilt in accordance with the new principles, including a municipal core of lifts, escalators, and all utility services. Sites could then be leased to developers with leasehold conditions to ensure compliance with the intentions of the scheme. The new upper level would be connected by pedestrian bridges to a new system of upper level pedestrian walkways which would be built over the pavements in the existing conventional streets. The pavements would become additional road space and all access to buildings would be at first-floor level. All new applications for development would be expected to fit in with this new conception.

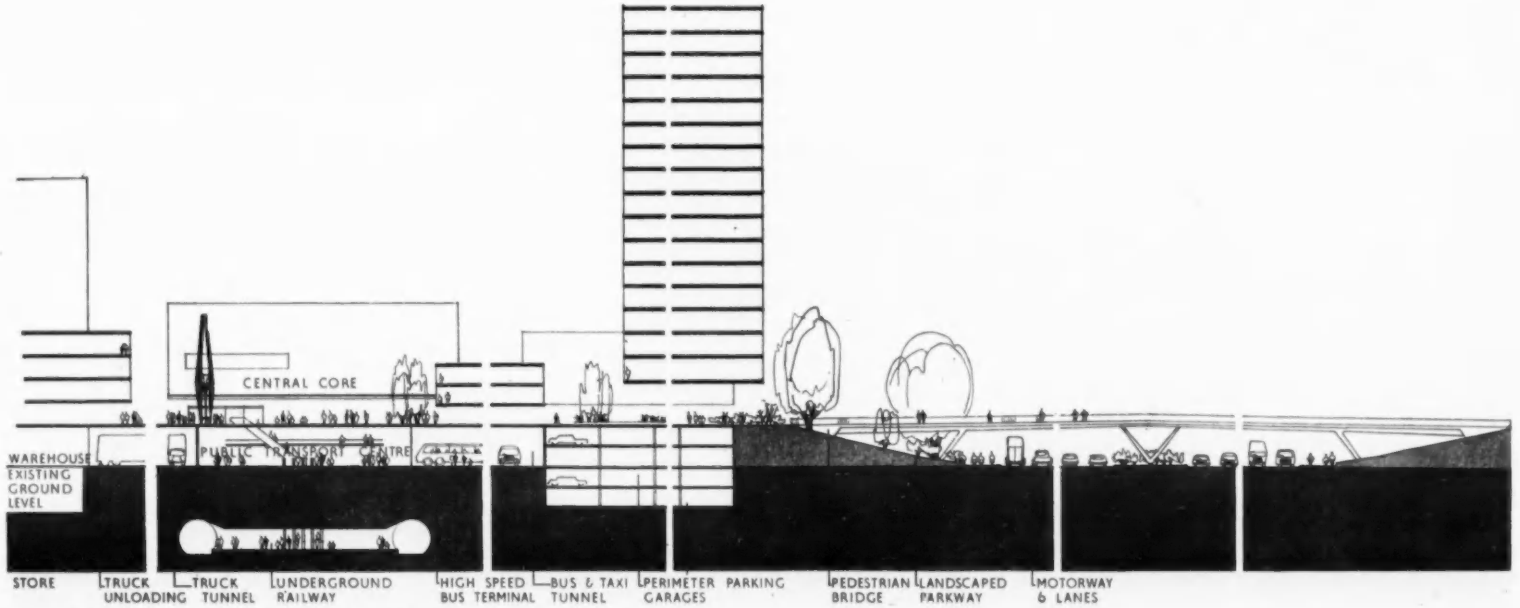
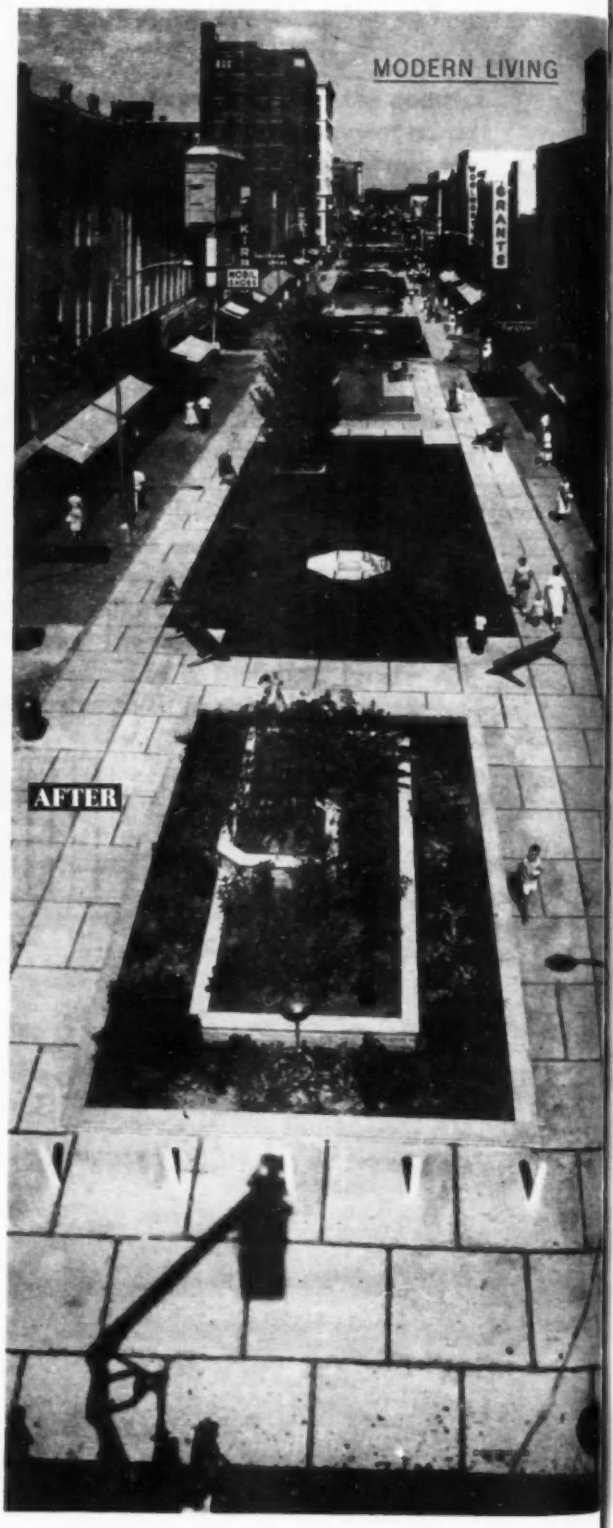


Fig. 4. Section through a development block to show the use of three levels.

TRAFFIC MAZE on Burdick Street was the rule through 1958. Parking space was poor, real estate values down and business at low ebb.

DOWNTOWN GETS UPLIFT

The noisy jumble of creeping cars, dodging pedestrians and nonexistent parking space that most U.S. city-dwellers know as "downtown" can be untangled, as a few cities have strikingly demonstrated. A year ago the downtown section of Kalamazoo, Mich. (*above*) was typical of this old-fashioned urban confusion. The area was decaying, no new buildings had been put up there in 25 years, and shoppers were deserting it in favor of suburban shopping centers. Today (*right*) the same blocks have been transformed into a quiet, carless mall decorated with shrubbery and pools, with ample parking a few blocks away. The result of this downtown uplift: business is booming, property values are up, and a million-dollar new store is being built. Fifty-five other cities have plans similar to Kalamazoo's pioneer project.



SHOPPERS' DELIGHT is new 924-foot mall containing gardens, multicolored pavement, playground and benches.

The Japan Architect
PLANNING IN TOKYO
"The Japan Architect," October, 1959. Pages 5-15. Illustrations.
711.4 (52)

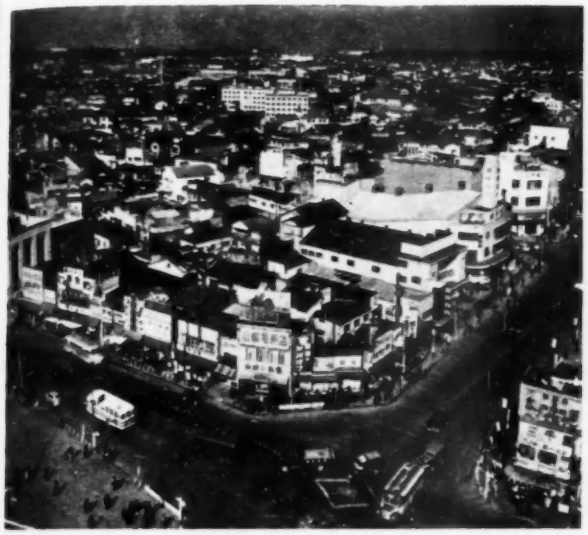
1. Tokyo, one of the world's largest cities, has extremely unique planning problems. Yet the planning solutions to their problems are not much different from the solutions sought by Western metropolises; satellite cities, and the use of high rise buildings.

2. Tokyo's population is expected to reach 10,000,000 in 1961 and 15,000,000 in 1975. True, the influx of new people may slack off, as it has done in many other large cities, but from the economic and social viewpoint, this seems unlikely. The fact is that Tokyo has far and away the highest standard of living in Japan--the average wage is almost three times as much as in the poorest districts--Tokyo's lights burn bright for the young men and women who make up the surplus farm population.

3. Development of Tokyo. In 1872, the town of Edo became Tokyo, and a huge fire destroyed the Ginza. The national government, dedicated to the principle of Westernization, not only widened Ginza Street to a breadth of 72 feet, but lined it with brick buildings in the Western style. Again, after the great Tokyo earthquake of 1923, the government undertook a modernization program which at least got as far as laying out the few wide streets the city has today. After World War II, a program for the reconstruction of 115 cities damaged in air raids was adopted. Still, in essence urban redevelopment in Japan has been limited to reconstruction after disasters.

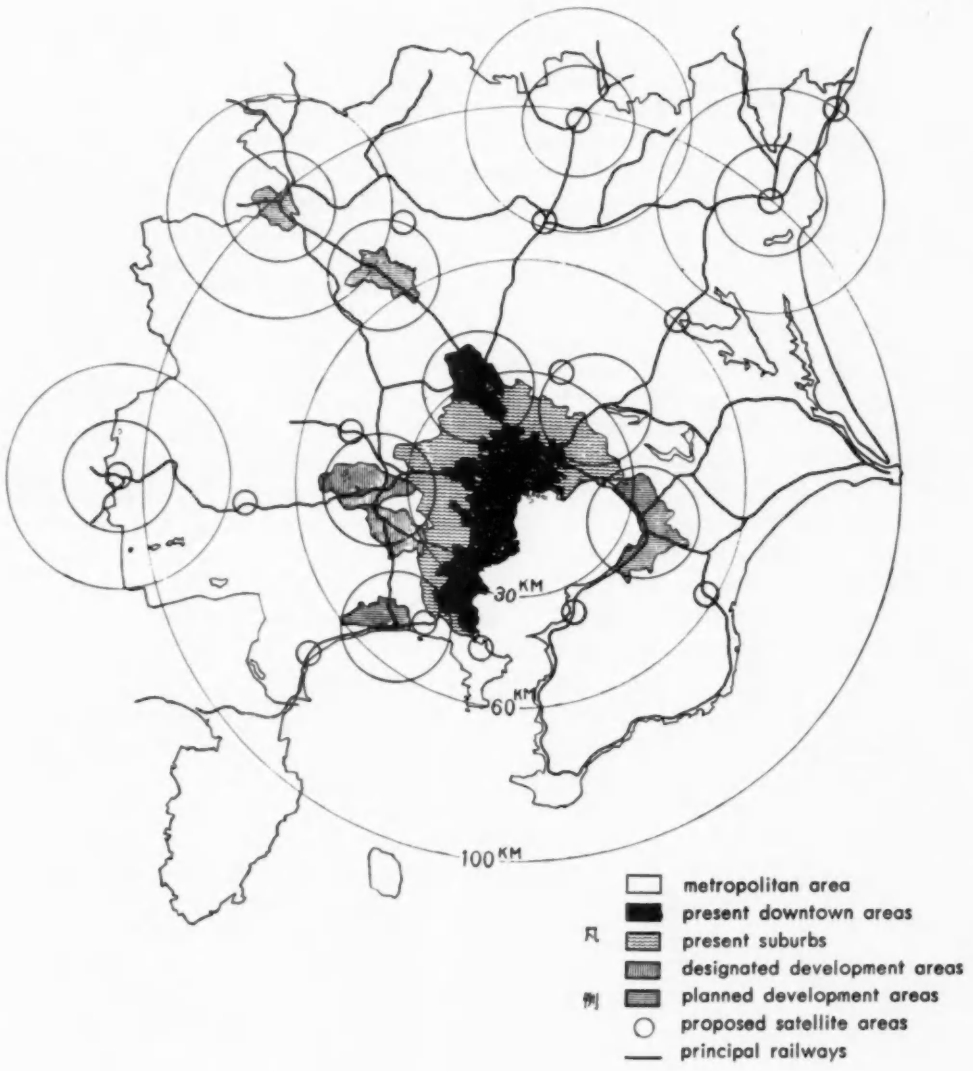
4. Though Tokyo has thus been destroyed and reconstructed twice in the twentieth century, it remains essentially a city of wooden buildings, a majority of which have neither gas nor sewage. Furthermore, the streets on which the rows of tiny wooden houses are lined are as often as not wide enough for only one automobile, and it is often impossible for car owners to park even near their homes. The problem of providing better housing--housing that is more suitable to a huge city--is inextricably connected with the problem of widening the streets, and on this score the city and the national government alike have shown little foresight. Indeed, only six or seven years ago many officials were convinced that there would never be enough automobile traffic in downtown Tokyo now as there were ten years ago, the only major construction yet begun is the much-criticized elevated highway running through about one kilometer of the central business district (see page 45), and that is not yet finished.

Planning in Tokyo



An example of the sort of partial planning that is being done in Tokyo is to be found in Shibuya, one of the main business districts. The top picture shows the area in front of Shibuya Station as it looked around 1950. The black-market stalls that had once crowded the streets had disappeared, but the area was still a conglommeration of tiny shops. Kan Hideshima suggested to the owners of the land the arrangement shown in the middle, and now the district has been rebuilt as shown in the picture at bottom. Though the lay of the land has been clarified to some extent, Hideshima's spacious plaza and pilotis went by the boards. The land in this district is largely owned by one firm, and extensive development has taken place since the war, but much remains to be done.

The national Department of Construction is planning this superblock of apartment houses and auxiliary buildings for the area of Shinanomachi (shaded in the picture beneath). Non-government architects collaborated on the plan, which has considerably more variety than the customary housing project. The street on the right is a proposed super-highway. The green area in the lower left of the bottom picture is a corner of the park where the Tokyo Olympic Games are to be held in 1964 (THE JAPAN ARCHITECT, *August, 1959*).



At right is a map showing prospective locations for satellite cities. It is hoped that the satellites will help prevent excessive growth of population in the city proper, but many wonder if they will not simply be absorbed.

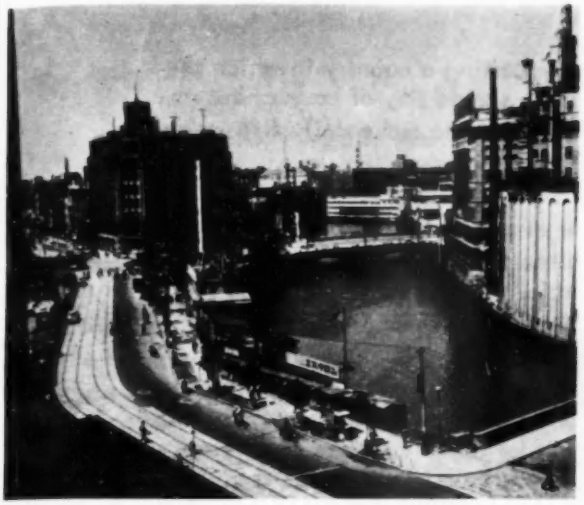
5. High-rise Buildings. One of the most obvious solutions to Tokyo's difficulties is to build upward, and the postwar period has seen a strong trend in this direction. Tokyo's central business district is now almost completely covered with buildings of the maximum height allowed by city regulations (31 meters), and throughout the downtown area small shops and stores are giving way to eight- or nine-story structures. Financiers have discovered that high-rise luxury apartment houses are profitable, and the government is experimenting with similar buildings for middle and low income groups.

6. Still, the average building in Tokyo is only 1.3 stories high, and even within the loop line which connects the leading business centers, the average is only 1.6 stories. In most sections of town the skyline is extremely irregular, and the variety of buildings is motley. Private builders usually attempt to cover every inch of space available, without regard for the increased demand their high-rise buildings put on the surrounding streets and parking areas. City regulations fix the maximum height of buildings, but not the minimum height, and the maximum limit is in one sense more of a hindrance to urban development than an aid, since it prevents the full exploitation of modern building materials in areas where higher buildings would be desirable. Most architects agree that reinforced concrete buildings would be more economical and practical if built to a height double the present limit or more.

7. A noteworthy contribution has been made to the problem of creating more living space by public and private housing programs which have set up communities of medium-rise apartment buildings both in the city and in the suburbs. As a rule, the housing provided in such centers is better than average, and the cost is reasonable, but one often has the impression that these buildings are the slums of the future. Furthermore, they are usually monotonous in the extreme. An exception is a new plan for a superblock in Shinanomachi (see pictures, page 42) which is more interesting.

8. Satellites. For years there has been a general plan to set up satellite cities around Tokyo, which would help prevent overcrowding in the city proper, and several areas lying within a radius of a hundred kilometers from central Tokyo have been designated for development program (see Map, page 43). Whether or not the satellites will remain in orbit, however, is problematic. Some planners believe they will eventually simply be absorbed into the city, thus increasing its sprawling area of low-level buildings, or at best become springboards for farmers whose utlimate aim is Tokyo. Certainly, unless transportation facilities were vastly better than they are now, the satellites could not be expected to draw off a significant proportion of Tokyo's present populace. Even if they succeed in accommodating a good proportion of the new arrivals, the problem of reorganizing and redeveloping the central area will remain.

9. Many ideas advanced in connection with the re-planning of Tokyo have the smell of the nineteenth century about them. There has been, for instance, a good deal of talk about a green belt around the city, which utterly ignores the fact that



Above at right is the Sukiyabashi district in central Tokyo. Since 1953 the canal has been filled in and covered with and elevated highway (THE JAPAN ARCHITECT, *July, 1959*), *but the results are not quite so pleasing as Kan Hideshima's plan, which envisioned open spaces under the highway. These spaces are now occupied by stores, which have been open for two or three years, though the highway itself is not yet complete.*

t h e city is and must be a center of production supporting a country in which the farmlands are already saturated. Green areas there should be, of course, but an artificial belt of open land around the city will do little to make daily life inside the city more comfortable and fruitful.

10. Need for Cooperation. In Japan almost everyone in the field of city planning is an official of one sort or another. Architects, on the other hand, are for the most part private citizens with a healthy suspicion of bureaucracy. The two groups tend to think differently and to work differently; indeed, they are often highly critical of each other. Planners often say, of example, that the usual architect is an egoist who cares only about his own building and pays no attention to the part those buildings play in the formation of the city. Architects, for their part, retort that the planners do little but enact a lot of troublesome regulations that make it difficult to erect a proper building.

11. Despite this mutual distrust, however, the fact remains that a city is a large collection of buildings, and that the architects who design these buildings ought to be working hand in hand with those who lay the basic plans for urban growth and development. Briefly, the truth seems to be that architecture contains more elements of city design than architects have yet realized, while city planning contains more elements of architecture than the planners have yet realized. In this huge, mixed-up sprawling metropolis of Tokyo, it is essential that the two groups work together. Architects might, for example, refrain from putting out visionary schemes for cities of the future until they have developed a few sound plans for existing city streets, while planners might on their side break through the bonds of bureaucracy and try to carry these plans out. Whatever the mode of reaching agreement, it is necessary in the interest of the general public that agreement be reached. Only in this way can a really sound plan for urban reconstruction be created.

Interbuild

MOTOPIA

"United Kingdom Another Vision," Interbuild, September, 1959, Pages 40-41. Illustrations.

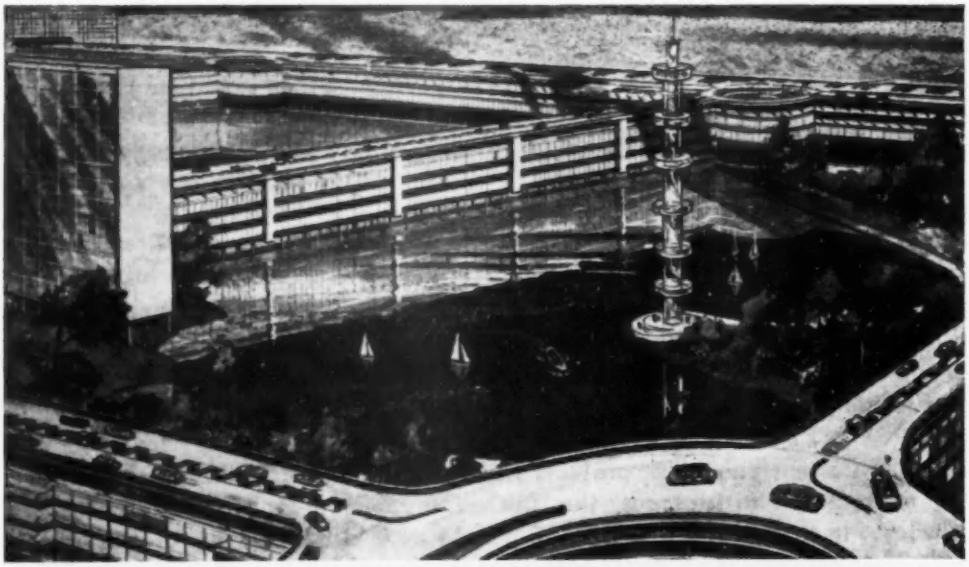
711.427 (410)

1. The Glass Age Development Committee has provided a scheme for a utopia with the roads going along the roofs of the buildings. This scheme is not unlike the scheme presented by Le Crobusier for Algiers in 1933. It is an intriguing idea in answer to the problems of the motor age.

2. The Committee's latest project, its fourth, Motopia, is a solution to the annual massacre on British roads, the 20th century equivalent of Genghiz Khan's janissaries. In the UK last year, 5,970 people were killed and the total of other casualities included almost 50,000 children. Motopia proposed to put the traffic where it belongs--away from pedestrians. It can be applied now to any piece of land that is fairly flat and free of existing dwellings. It needs no new constructional techniques. Its cost is comparable with Roehampton estate. (See EKISTICS 7:43 pp. 361-367)

3. The plan is for a town of 30,000 to be built with all the roads at roof level and the ground kept completely free of all vehicles. Continuous four-story terrace accommodation arranged in a grid pattern would carry on its roof dual carriageway roads, each carriageway 17 feet wide, cambered slightly towards centre for rain-water drainage. On each side of the road is a reinforced concrete kerb and barrier 3 feet 6 inches high and there is a normal central reservation. Entry of traffic to the rooftop motorways on the site chosen would be by a flyover junction 30 feet above existing roads and a gradient of 1 in 12 to the 50 foot roof level.

4. Beneath these motorways, terraces are built of reinforced concrete box frame with fibreglass quilting between all floors for sound insulation. Normal foundations could be used. Structure in the terracing is stiffened to deal with any effects from braking on the road above. Accommodation in the terraces would comprise ground floor for miscellaneous use and covered ways; first to third floors, flats and maisonettes of from one to six rooms; fourth floor, mews parking and access road. All services are situated centrally and lifts and stairs give access from ground floor to mews level. One advantage of the fourth floor mews level devoted to parking space is that it would act as an additional insulator. All buildings are fully air-conditioned.



Top, under the roof roads can be seen the mews, or access roads to the lower floors of the terraces and, beyond these, a tower block of tall flats. To the right is a glass television restaurant where a separate television programme is supposed to take place in each of the six restaurant terraces. Bottom picture is a general aerial view of Motopia showing the layout of the squares, lakes, private gardens and canals along the continuous terraces of housing. In the squares are schools, churches, clubs, community centres and a concert hall

View of Motopia from the north-east showing the entrance from ground to roof-level roads of the town. The road in the foreground would have to be built between existing roads and from it the flyover would take any flow of cars. The low building under the flyover is the station with its own roof car park and, to the left, is the shopping arcade with the 20-storey commercial tower rising above it

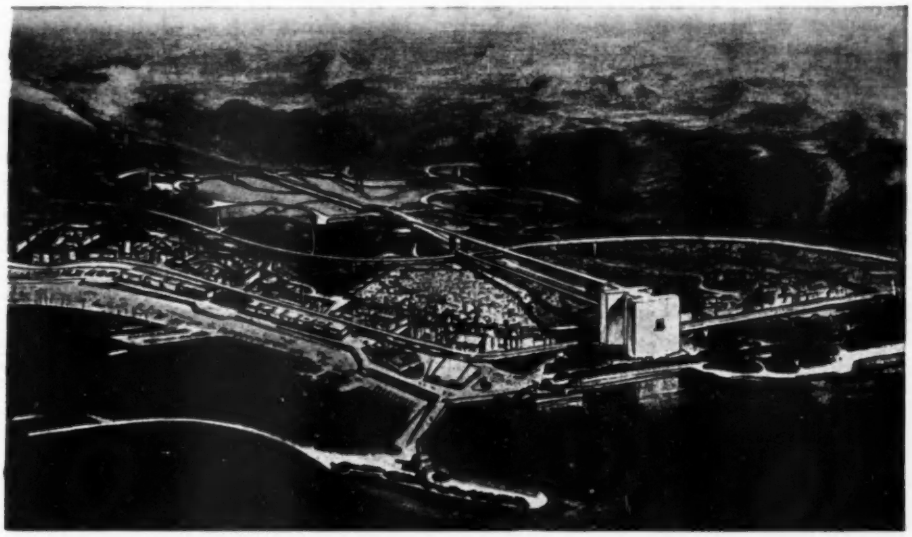
5. At the junctions of the grids formed by the terraces are roundabouts with access to the mews level of 40 feet above ground. Only service vehicles in a very restricted category would be allowed any further down. Below road level the roundabouts are intended as village circles with public houses, clubrooms, nursery schools and so on. Fifteen of the 35 roundabouts will be used as bus stops and all walks to them will be covered.

6. Inside this area is a park-like layout which takes advantage of a water-studded site to add lakes and canals with Venetian effect. Eight blocks of 15 story flats bridge the terrace accommodation and there is a 200 foot, 20-story administrative block above the shopping centre which will house council offices, fire brigade and police headquarters in its top floors with the majority of the building occupied by office space. Also in the squares are sites for seven churches, 12 nursery schools, seven primary schools and six secondary schools. Catering for the amateur horticulturist latent in most UK citizens, 1,350 plots have been allocated for gardens. Playing fields, and sports grounds also take up some of the open ground between the water-bus routes of the canals and lakes.

7. The town centre is based round the tall tower of the administrative block. In addition to its office accommodation for 3,000--hardly a town centre function--Motopia allows for shopping and entertainment, a few light and service industries and covered parking for 3,000 cars at the 30 foot and 40 foot levels plus 1,500 parking spaces on the open roof.

8. A shopping arcade flanks the complete eastern length of Motopia and pedestrians are walled off from outside by huge sheets of glass along this length (the only evidence that Motopia is sponsored by public spirited glass manufacturers). Along the floor of the arcade, moving pavements--an American innovation--will transport customers painlessly along the frontage of the 400,000 square feet of shopping space arranged on first and ground floors. The German system of "Paternosters"--a head-scratching name for vertical lifts moving in one continuous band--will enable motorists to descend from the parking level above. This area has been called the "great Stoa" which has, in some canvassed opinions, a faintly ornithological or Marx Brothers ring about it. Another concession to the tramp of modern transport has been made in the provision of helicopter cul de sacs on another perimeter of the development.

Le Corbusier
ELEVATED ROAD PLAN FOR ALGIERS
Le Corbusier et Pierre Jeannert Oeurve Complète de 1929-1934
Publieé par Willy Boesinger, Zurich, Sixième édition 1957. Page 175
711.427 (65)



Projet B, montrant les travaux de voirie necessaires et suffisants pour alimenter une population de 200 000 habitants sur les terrains de Fort-l'Empereur

Ici, on voit les substructions du régime des autostrades de Fort-l'Empereur. Première étape permettant de loger 70 000 habitants dans des conditions optima

Muldoon, James B.
RADIOACTIVITY: CLOAK AND GEIGER
Planning 1959, Selected Papers from the 25th Anniversary, National Planning Conference, Minneapolis, May 10-14, 1959. pp. 165-179. Illustration.
539.1: 711.554 (100) (73)

1. James B. Muldoon, Associate Editor, Massachusetts Law Quarterly, Boston, Massachusetts, has presented the various prlblems of planning for human welfare with the use of atomic energy sources. This is a problem which every nation will have to face, and that planners will have to take into account more and more in the future.

2. If there is any more basic justification for the existence of the professional planner than the public welfare itself we do not know what it may be; and if there is any single new effort at work in the world today that is more likely to tax the utmost intellectual resources of the professional planner in his efforts to achieve harmonious and healthy environments in his area of jurisdiction, it is the atomic energy revolution. Few if any professional planners are nuclear physicists or radiobiologists, but this is of no consequence. All of them, we trust, are guided by the principle that a proper balance of all interests, however conflicting, is the secret of a successful community, county, state or nation.

3. In this new area of world progress, the man on the street has neither the time nor the information to make plans to meet future problems. Nuclear energy, after all, is not significantly dissimilar from the problems of zoning, redevelopment, sewage, and road construction, the protection of water and natural resources, and the preservation of public health. These last problems are all part of the atomic energy picture and they are all familiar to the planning profession.

4. THE CITY OF CONURBIA--PLANNED CHAOS. To summarize some of the more likely situations in which a community might expect to encounter nuclear energy and radiation, controlled or otherwise, we have prepared a plan of the mythical community of Conurbia. We sincerely hope that no such place exists and we hope further that no community is ever visited with the troubles that are freely showered on Conurbia. This much we do know: all of the events have already taken place somewhere (except as otherwise noted) and all of them are of such a nature as to expect that a recurrence is inevitable. Each horrible example is numbered in the legend to correspond with its location on the map.

5. One event which never took place came to our attention as a result of reading a new detective novel entitled Chain Reaction (by Hodder-Williams, Hodder and Stoughton, London, 1959). This novel, written with technical aid of people from Crosse and Blackwell, H. J. Heinz Company, Kodak, and the United Kingdom Atomic

CONURBIA and its ENVIRONS
LAKE INFERIOR
OR
PACANTIC OCEAN
NORTHLEY
DECURVIA
CALIFORNIA HEIGHTS
AVALON
TARAMA PARK
TRANSFER HEIGHTS
SALVADOR
VALHALLA HIGHWAY
AIR OF AGRICULTURE CONSERVATIONS HEADQUARTERS
HOBBYLIA
DEAR HILLS
CITY HALL
CLAM BAY
GRAMP. BETH ISLAND
SEWAGE PLANT
AIRPORT
MAR-A-LAR RIDGE
PEBBLE MEADOWS
PINEWAY
SANDHILLY
DEAN CORNERS
BAYSIDE
BAYWOOD
VERLEN HILLS
GOLFRIDGE
TRUTHFULNESS GARDENS
CALVIN COLLEGE OF CHRISTIAN LEARNING
SHORE ACRES ESTATES
DOCKS
SHIP CHANNEL
1 READY ELECTRIC NUCLEAR POWER REACTOR
2 WASTE DISPOSAL
3 TOXIC WASTE DUMP
4 PHOTON LAB
5 TANK CRUISING
6 FERROUS ACCIDENT
7 HOSPITAL
8 PIER - BOATING AREA
9 CONSERVATION PROJECT
10 AIRPORT
11 SUSPICIOUS OBJECT
12 CHEM. PROCESS
13 LAND MATERIAL
14 SEWAGE PLANT
15 ACCIDENT
16 DAIRY
17 THIEF
18 OLD PAW RIVER

Energy Authority, is solidly bottomed on cold present fact. It seems that Sydney Spigget, the man behind Spiggett's Canned Foods, Ltd., started life as a "barrow boy" and at the time of the pertinent events he was putting up lorryloads of canned beans at a clip. He finds himself ushered into the presence of the grand high llama of the Atomic Energy Authority as a result of the deductions of a gentleman who discovers that his cans of beans leave impressions on photographic paper. The man's daughter is found to be suffering from a rare form of anemia, and in the events that follow, the tinned beans are found to be radioactive. When candy bars also prove to be producing radiation, there is somewhat of a panic at the top, and the novel itself (which will not go down in the history of great literature) shows how a human error results in the radioactive contamination of a vast supply of sugar and very nearly results in a national emergency.

6. It may seem anything but objective to comment on a work of fiction in this report, but remember this--it can happen and if it does the consequences will be serious indeed. The novel was probably conceived as a result of the events at the Windscale Reactor near Calder Hall in northwest England on October 10, 1957. In that instance, all of the milk produced in an area 200 miles square was condemned and poured into the sea, but not until at least some of it has been consumed. The multi-million dollar Windscale reactors are now sealed up for all time and have been designated as "monuments to ignorance."

7. Power reactor. At the top middle of the map is the power reactor. This is the facility in which nuclear energy is converted into heat for steam that produces electric power. There are several things to keep in mind about reactors. They are not potential bombs and it is hardly conceivable (but it is possible) that they would release their energy into the air at one awful moment. The chief danger is from the leakage of radioactive substances, including waste materials, Reactors of the Windscale design are no longer considered safe.

8. A reactor would be the largest facility one might find in the ordinary community. Every effort is made, within the framework of present knowledge, to make the things safe. But here again, a considerable percentage of the construction costs are for safety features that some in the industry deem unnecessary. Thus far the wiser heads have prevailed and safety, necessary or not, has been accepted, despite the cost. Here as elsewhere one sees the necessity for considerable courage on the part of local governments, strict intellectual honesty, and the ability to keep right on saying "no" until the nuclear fraternity proves its case beyond a reasonable doubt.

9. Waste disposal. You cannot get rid of atomic wastes by sending the trash collector. The possibilities for radioactive contamination are real, since the present technology produces far more "hot" waste than can conveniently be disposed of. There are, in general, two types of waste from nuclear activities--low-level (or low-power) and high-level (of highly powerful and dangerous). For some time low-level

wastes have been sealed in 55-gallon concrete drums and dumped at sea. Pre-licenses call for dumping at 1,000 fathoms, but some waste has been dumped in much shallower water. High-level wastes are not dumped at sea, and, indeed, present a tremendous problem. Much of this material is buried and may retain its radioactivity for countless years, even hundreds of years in some cases. It was once even suggested that this material be shot into outer space; and there have been suggestions that salt beds be used, since the waste would never reach the water table. Using present techniques of disposal, one nuclear facility reports that the cost of disposing of liquid waste in 1958 was $366,392; the most expensive trash ever put in a barrel. Because of this high cost, and with the growth of use of nuclear power, there is pressure for the cheaper disposal of this waste.

10. It must not be thought that seacoast towns are the only areas involved in the dumping of atomic waste. On the map we see "Old Man River" (18). Rivers are now being used for the "dilution and dispersal" of atomic wastes of the low-level variety. This situation exists near Oak Ridge, Tennessee, and near Hanford, Washington, for example. Constant monitoring of fish, wild life, and plants is carried on, and there appears to be a possibility that no more (certainly) than 10 percent of the "permissible limit" of radioactivity is possible.

11. Tidal Tests. Closely allied with ocean dumping is the operation by which tidal currents are traced with radioactive materials. This procedure is not particularly dangerous and is of great assistance in the study of tides and currents. Many tidal tests have been made in Britain, and on more than one occasion there was serious objection. The waste dumping at Windscale was by pipeline. It was planned that the tidal currents would dilute the hot waste and diffuse it into the Atlantic currents. From tests carried on in this area, it was found that fish had become mildly radioactive (as was found in the Columbia River) but well within the safe limits. On the bathing beaches there was some contamination. It was also said to be within normal limits.

12. Isotope laboratory. An isotope is a radioactive element. Iodine, for example, found in seaweed is put on cuts and bruises. It has no radioactive properties. Iodine-131, on the other hand, is radioactive and has medical and other uses. The latter is an isotope of iodine. Radioactive isotopes are prepared for "consumer" use in various laboratories. Many are placed in capsules for safety and to protect the radioactive source. One might say that this work is done at an isotope lab.

13. Perhaps the most famous incident involving contamination took place in Houston, Texas, in early 1957. Radioactive material was spilled and employees carried the contaminated materials to their cars and homes. Another example, is a death which took place on January 1, 1959 at the Los Alamos radiation lab. The victim's physician made an ominous statement: "For severe radiation injury of this sort, there is no specific treatment." There seems to be good reason to restrict the location of isotope laboratories to sparsely populated areas away from main traffic arteries.

14. Train derailments. We have information on at least 5 train derailments in which radioactive materials were involved. None was serious, but at Danville, Kentucky, on March 1, 1959, some 125 residents were evacuated by state police until the cargo was proved not dangerous. Another practical joker tied up London's Victoria Station on February 26, 1959 by giving the alarm that a canister of radioactive material had been left in the parcel room. It was four and a half hours before an expert arrived with a Geiger counter.

15. Vehicular accident. On the map, a motor vehicle accident is presumed to have taken place on an interchange for the Paradise Express Turnpike, tying up traffic near the reactor. There are a number of instances involving accidents to vehicles carrying a cargo of radioactive materials. Thus far none of these incidents has had any serious consequences. Many local authorities are disturbed about the transportation of "hot" materials, since an accident could put an important highway intersection out of operation for an indefinite time. It would seem that the establishment of designated routes for the transportation of "hot" materials might be wise. If a cargo of liquid waste were upeset, there would be a substantial decontamination problem.

16. Hospital. The medical center shown on the map would make use of x-rays and radioactive isotopes in medical treatment. In a medical facility there is always a problem of waste disposal and over-exposure. Some medical centers may possibly have reactors for deep therapy in cancer cases. Some control over waste disposal, especially in a large hospital, must be exercised.

17. Fire in radioactive materials. There have been a number of fires in which the presence of radioactive materials was suspected. For this reason, fire and police departments should be ready with radiation detectors where such "hot" materials might be found. Because of the fire danger, users of radioactive materials should register with local protective departments.

18. One important contribution that can be made in regard to fires is to see to it that tests for radioactivity are made (if radiation is suspected) as soon as possible and not after the fire is out. In some cases firemen were exposed for longer periods than would be acceptable, because radiation checks were delayed.

19. Radiography. Radiography is a process by which radioactive materials are used to detect faults in metals. During construction, radiography is used to check welding and other fabrications of metals. There are a number of instances of injuries caused as a result. Radioactive materials are used in a number of different ways and their use is always increasing. Some examples include the manufacture of paper and plastics and other materials. There needs to be more strict control is this area.

20. Airport. Radioactive materials are often shipped by air. A shipment of radioactive gold was actually lost on its journey from Oak Ridge to San Francisco. Other instances have come to light in which the container was defective. One unusual case involved a radioactive Boeing 707. Because of radioactivity on the fuselage, the plane was taken out of service. The source of the radioactivity was fall-out from bomb tests. Ordinarily a plane that was contaminated would be washed down with soap and water. A public health service spokesman said that washing the plane does not get rid of radioactivity; it merely transfers it from one place to another.

21. Dairy. We have already spoken of instances, such as the one at Windscale, in which radioactive materials got into the milk supply. This danger is made more serious because all our milk already has some degree of radioactive contamination from bomb tests. Further pollution of milk from air-born radiation, a chemical process plant, or a reactor is to be avoided. The amount of pollution of the milk supply in one area is not always the same as in another, and it has been thought that local and state officials should keep check on the amount of radiation.

22. Conclusion. In the inevitable struggle that came with progress in the use of each of the great energy sources now so widely known and used, there were countless abuses and evils. No form of energy has been developed without some cost to the public good. Fires caused by imperfectly designed steam engines, waste of natural resources in the development of petroleum fields, sickness and disasters in poorly operated coal mines, the many injustices of the industrial revolution of the Nineteenth Century, exploitation of labor, the abuses of concentrated economic power, and the countless international disputes involved--all these are only a part of the price men paid for what has been commonplace for a long time.

23. It may be a debatable point, but we think that never before has the welfare of the public been as immediately involved in the development of an energy source as it is now. We should not be afraid of nuclear energy; but we should realize that it cannot be ours without a struggle against inherent evils. For the planning profession and for the public these evils are chiefly concerned with public health and safety. But there will be few if any officers of a city, county, or state--and no planners--who will not meet the challenge of the atom head on and soon.

Department of Scientific and Industrial Research

THE POST-WAR HOUSING PROGRAMME OF THE IMPERIAL TOBACCO COMPANY AFRICAN ORGANIZATION

Overseas Building Notes, No. 62, September, 1959. Pages 1-10. Illustrations.

711.58 (67)

1. This article, based on material supplied by the architect to the African Organisation, gives details of design and costs in four village projects. The actual building and labouring operations were carried out by Africans and a system of following trades was organized to minimise use of time and labour. Interesting comparison may be made between this article and an abstract on home ownership schemes in Southern Rhodesia published in EKISTICS 8:48, pages 259-266.

2. The Imperial Tobacco Company's post-war African Village projects, involving a total expenditure of more than half-a-million pounds, are listed here: --

In Nyasaland
- Limbe Branch Village
- Maone Estate Village

In Southern Rhodesia
- Msasa Branch Village extension
- Chingamwe Forestry Estate Villages (Inyanga District)

3. The handling and packing factories operate during the buying season, March-April to October, and most of the labour is only employed during that period, the men returning to their own villages during the off-season. The majority of employees, therefore, only require bachelor accommodation for six or seven months, and houses for married personnel are restricted to regular employees who work for the Company the whole year round. Hence the proportion of bachelor to married accommodation in the first three villages is unusually high. In the Forestry Estate Villages, however, there is a constant labour force and the ratio of bachelor to married accommodation is reversed at 2 to 3. Although a total African labour force of nearly five thousand is employed in the organisation, not all of them live on Company property. A number in Nyasaland particularly, live in their own village nearby.

4. The costing system and expenditure control are as follows:

(a) Charged to the work are: all material, transport and African labour costs; European (building trades) general foremen's time; local authority fees; builder's plant, equipment and miscellaneous items.

Fig. 1 Limbe Branch Village under construction.

(b) Not charged are: other Europeans' time; architectural, engineering and general administration overheads.

5. Limbe Branch Village. The new village, covering 86 acres, is built on the site of earlier labour lines. These were of wattle and daub and log cabin construction with deep pit latrines. The new layout had to be superimposed on the old, and no part of the old accommodation could be demolished before the equivalent new was ready for occupation. An aerial photograph (Figure 1) taken in 1957, shows old and new mingled in this way.

6. There are three main sections of the village:

(a) A married area, having 360 separate dwellings with kitchen, living room, one or two bedrooms, porch, and toilet facilities. Most houses are of one-bedroom type, grouped in blocks of two or four (Figure 2); the gross floor area is 445 to 500 square feet per house.

(b) A Bachelor area, housing 736 persons in 46 blocks, accommodating 16 with communal toilet facilities comprising one lavatory block to six blocks of living quarters, and one large shower/clothes-washing block with hot water for the whole bachelor group.

(c) A communal area situated between the two foregoing areas and within easy reach of each. Here there is a recreation area with communal buildings, e.g., school, mosque, church, gathered around. A community centre will be built here at a later date. There are secondary areas dispersed throughout the village with women's and childrens' clinic, and isolation block for infectious complaints, and a group of four beer-brewing/drinking buildings, let to the licensed women brewers of the village.

7. Conventional construction has been adopted throughout, i.e., 1:3:6 concrete strip foundations and floor slabs, and 9-inch brick walls, generally plastered both faces. Most of the bricks were made by the company with a wire cut machine on an adjoining site, but later slop type bricks had to be purchased from local brickmakers because of lack of suitable soil; all brick was inferior so that much of the work was plastered and erected in one brick thickness. For housing, corrugated asbestos-cement sheets on timber purlins were used for roofing; also steel windows and doors, except the external doors which are of stable pattern in blue gum wood. Decoration is cement-paint externally and limewash internally, with woodwork and metalwork finished in oilpaint. Services include waterborne sewerage, electric light in buildings and streets, and piped water supply.

Fig. 2 One-bedroom houses at Limbe Village.

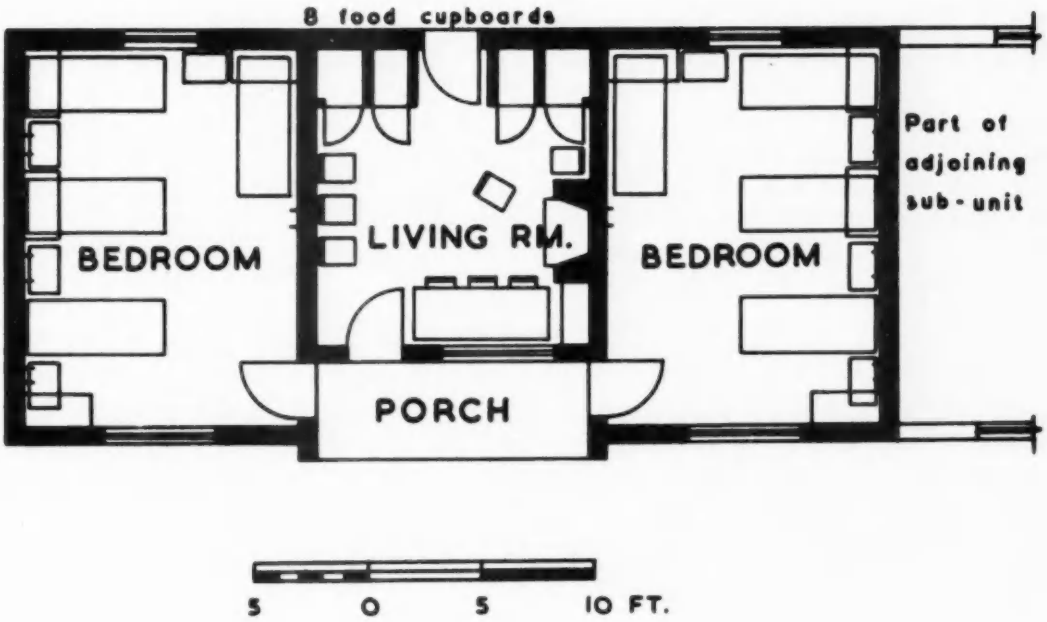


Fig. 5 Bachelor quarters, Limbe Village.

8. Maone Estate Village. The factory at Maone is subsidiary of Limbe branch and the new village is a housing satellite of Limbe, sharing the latter's welfare and recreational facilities. Buildings, layout, and services are much simpler in character, and construction is less conventional.

9. There are 670 employees accommodated in the bachelor section, housed in 63 bedroom blocks each of 3 rooms. Cooking, dining, and washing facilities are provided in seven composite buildings with water and electric light. The married area, locally separated from the bachelor area, comprises 30 houses of one design. They are fitted with stoves and electric light but no plumbing. A separate shower and W.C. are provided for each house, but for economy they are detached from the houses and grouped in units of four. Pot-washing slabs are located between these blocks, also for convenient connexion to the services.

10. The Village is sited on sloping ground which was bench terraced along the contour lines before building was started. The terraces were drained and grassed and shade trees were planted. The sub-soil is good, and by siting the buildings on the cut portion of the terraces, allowing the fill to form a grassed apron in front, it was possible to cast the concrete foundations and floors monolithically. Sets of steel templates, made up from modified road forms, were used for the dual purpose of setting out and concrete form-work. The concrete is not reinforced. This method is a great time saver, involves very little excavation, and is eminently satisfactory.

11. The walls were built with interlocking blocks (Figure 7) manufactured on site using a 10:1 aggregate-concrete mix. Apart from the use of a cement-sand grout poured into the vertical keyways, and a final skimming of plaster, this is a dry form of construction. When the operatives are familiar with the method it is speedy and comparatively simple, although it has limitations.

12. Msasa Branch Village Extension. Here there are a school, a church, and 151 houses to bring the accommodation available for married employees to 250 in addition to the existing bachelor accommodation for 1640 people. Recent additions include a clinic with maternity facilities and a mosque. A community centre is intended to be built in the future.

13. Chingamwe Forestry Estate Villages. There are three villages on this 10,000 acre estate. Each village is widely separated from the next and each contains 30 to 40 detached houses of dual-purpose type to accommodate one married employee and family or a group of bachelors (Figure 10) allowing for more flexibility.

Fig. 7 Interlocking block construction showing method of bonding, forming corners and jambs. The size of the standard block is 18 in. x 18 in.

Fig. 8 Msasa Village extension - Aerial view

Bauer, K. W.
A GREENBELT TOWN GROWS UP
"The American City," October, 1959. Pages 143-148
711.435 (73)

1. In the United States there are three so-called "greenbelt towns" all federally built as experiments in planning design in the middle 1930's. Mr. Bauer, who had served as a consulting engineer in Milwaukee, Wisconsin, and now Chief of Current Planning in Madison, Wisconsin, reports how one of these towns, Greendale, Wisconsin, has developed.

2. Original Design. Greendale approximately 7 miles southwest of Milwaukee, originally was located on a site of approximately 3,400 acres. The actual town site utilized about 5 percent of this total; the remainder serving as the agricultural greenbelt encircling the "urban" development. On this townsite were erected some 360 buildings containing 572 family units. These ranged from single-family dwellings to 6-family row houses. Rents were low, making no effort to meet any capital costs, but adequate to provide for operation and maintenance. The little town had a community center consisting of a shopping area, school and community building, administration building, fire and police building, and public works building, all conveniently grouped. It had water and sewage purification plants and a central heating plant. The entire town was admirably planned to fit its site and conserve the natural beauty of the area.

3. The street pattern was functional; it separated arterial and service streets, and to a considerable extent, separated pedestrian ways from both. In the 20 years of Greendale's existence there has been no pedestrian fatality. The buildings, while diverse in form and placement, still possessed architectural unity. The finished town possessed a charm and a livability which few other communities can approach.

4. The experiment suffered because of lack of interest on a national level. Moreover, some found it a convenient target for attack as a socialist venture. Consequently, the federal government decided to dispose of the village in 1952. Three large Milwaukee corporations decided to join forces and purchase the land. These organizations, the Allis-Chalmers Manufacturing Company, the Kearney and Trecker Corporation, and the Boston Store, formed the Milwaukee Community Development Corporation, "MCDC," with the expressed intention of conserving the improved property and of sponsoring the planned expansion of the original townsite in as much harmony with the original greenbelt concept as the economics of private enterprise would permit. MCDC engaged a permanent planning staff including one of the original greenbelt town planners, to prepare, in cooperation with the Village Plan Commission, an overall plan for the development of the village, as well as to administer development policies.

5. New Plan. The plan, unlike that for many suburbs in the metropolitan area, attempts to provide a socially and economically balanced community by allocating land to both high and low cost multiple family residence use. Three single-family residence areas are provided by the plan with minimum lot areas of 8,140, 8,400 and 30,000 square feet. Homes range in price from $15,000 to $40,000. Multiple family residence areas call for minimum lot areas of 2,000 square feet per family. However, these multiple family areas are interspersed among the single-family areas to achieve an overall gross density of about 10 persons per acre. The overall gross density of the original town site was, by comparison, approximately 14 persons per acre. In addition, land has been allocated to light industrial as well as commercial use, a departure from the original greenbelt concept, in order to strengthen the community's tax base. To date a large research laboratory and plastics molding plant have been constructed in the village, and a $500,000 addition to the original shopping center has been completed.

6. Development has been rapid. During a period when residential construction dropped 8 percent in the metropolitan area, Greendale's activity rose 40 percent, indicating that the distinctive characteristics of the village are attractive to the public. Platting is expected to continue at the rate of about 300 lots per year until Greendale is completely developed, at which time MCDC will be dissolved.

7. Some planners will be disappointed to learn that despite the quality and degree of control, the new plan for Greendale does not provide for the retention of a permanent greenbelt around the village, although it does approximate such a greenbelt through the use of park land along the southern and western boundaries of the Village. This is, indeed, the only serious departure the new plan makes from the old greenbelt concepts. Such a greenbelt would be highly desirable to insulate the village from development in surrounding communities, thereby limiting its size and helping to retain its characteristics as a distinctive community. However, the departure is understandable in that a private planning body, such as MCDC must, in order to exist at all, meet economic reality. In spite of this one weakness, the success of the Greendale planning efforts should warrant further consideration and study of the techniques involved.

White, L. E.
CHILDREN'S NEEDS IN HOUSING AREAS
The Housing Centre's Annual Conference, 1959, Fourth Session: Friday 3rd July. "Housing Review" Vol. 8 No. 5, September-October, 1959. Pages 159-162.
333.32 (100) (410)

1. Two papers were presented at the Annual Conference of the Housing Centre, London, on the topic of children's needs in housing areas. The first was presented by L. E. While, Liaison Officer, Harlow Development Corporation. He presents this from the viewpoint of the housing manager who is interested in the total make-up and inter-relationships of various components of a housing scheme. In contrast, Mrs. Muriel Smith from the London Council of Social Service views this from the aspect of the particular kinds of play areas and guidance needed by children outside the home. These two papers, complimenting each other, point to the areas in which planners and architects should be aware in providing for a suitable environment for children in housing projects anywhere in the world.

2. Whether we plan new towns or administer new housing estates, there is no more important subject we could discuss than the needs of children and young people. Although there are very significant differences between these two forms of new development, one thing they have in common: in their early years they are "children's towns."

3. For example, nearly one-fifth of Harlow's population is under five and nearly 40 per cent is under fifteen, and the birth-rate at 33 per thousand is approximately twice the national average. Thus, the age and family structure is highly abnormal. It is often popularly assumed that new towns are full of children because the birthrate is abnormally high. This requires qualification. As yet, there is no definite proof that the net birth-rate is significantly higher. The higher proportion of children arises mainly from the fact that the new town brings together at the same time and in the same place an exceptional number of people of the age group likely to have children, and because the conditions are generally ideal for the upbringing of young families, we must not be surprised to find the children there in great numbers.

4. With this high proportion of children, what are their needs which must be met in the new town or housing development.

(a) For the development of character and personality a child needs safety and the security of a family town.

(b) If children are to grow and develop they want space--in the house, in a garden, and out-of-doors.

(c) They need areas where they can be free with scope for adventure.

(d) Of all the public services, those provided by the local education authority are perhaps put under the greatest strain in trying to contain the progressive bulge in the school population, but it is necessary to give this exceptional priority to maintain high standards.

(e) Health centers are of great benefit to children.

(f) Provision of day nurseries and nursery schools are extremely important in a "children's town."

(g) Places for leisure time activities of teen-agers outside of the home.

Smith, Muriel
CHILDREN'S NEEDS IN HOUSING AREAS
The Housing Centre's Annual Conference, 1959, Fourth Session: Friday 3rd July. "Housing Review" Vol. 8 No. 5, September-October, 1959. Pages 162-164. Illustration.
333.32 (100) (4)

1. Today with the increased emphasis on building high blocks of flats there is a vital need for suitable play space for children and young people. Variety is essential but confusion exists about different types of play areas. My intention is to show you some of the different types of play areas now to be found in England and other parts of Europe; to offer some opinions about them and to suggest points for discussion.

2. Adventure Playgrounds. This describes the type of playground which can be seen in its most developed form in Copenhagen. Adventure playgrounds have a special appeal for boys and require a play leader of ability. The main feature is that children are allowed to use tools. They may dig caves, build houses, light fires and cook meals. While some law and order prevails within a very simple framework, the children are free to enjoy themselves in their own way. This type of playground may appear unsightly to adults. It should be screened as far as possible and serve a neighbourhood rather than a small housing area.

3. Play Parks. This is used to describe the type of play area found in the city of Stockholm, the U.S.A. and Canada. The main feature of the playground is a large amount of portable equipment which gives variety to the children's play. There is very little fixed equipment in the playgrounds and the money is spent on providing play leaders. The play leader is not there to organise the children, but as a friendly adult with experience and training unobtrusively helping the children to enjoy themselves. There is something special for each age group. This type of playground is not unsightly. In fact, it can be an attractive focal point in an area. It is ideal for the large housing scheme, as a neighbourhood playground or in a park.

4. Play Leadership in Parks. Some local authorities employ leaders to organise games in the park for children of school age. These organised games can be arranged to cater for all ages and have a particular appeal for older children.

5. Unorthodox (or Imaginative) Equipment in Play Areas. This type of playground is equipped with fixed equipment and probably some swings. The surface is often at different levels. The children are encouraged to use their imagination and invent their own games on concrete ships, castles, tunnels and other shapes, some of which can be given the dignified name of "play sculpture."

6. Orthodox (or Conventional) Play Areas. These are the playgrounds with which most of us are very familiar. Children undoubtedly enjoy swings, slides and roundabouts, but most of the other equipment offers very little challenge to the imagination or calls for much iniative. Children get tired of these playgrounds after a time and thus alternative forms of play areas are also considered.

7. Natural Play Areas. In some areas it is possible to leave a pleasant piece of ground with trees and shrubs in its natural state or with some slight improvements. The children often find such an area themselves and make it their own.

8. Day Camps. In the U.S.A., Canada, Holland and no doubt other countries, the Day Camp is popular. In summer holidays the children go to a central place, sometimes outside the town or in a park or common land where they can spend the day. There are tents or huts for shelter if it is wet and simple meals can be cooked or provided.

9. Toddlers Play Areas. Children under seven need sand and water with which to play and a hard surface on which they can ride their tricycles. There should always be a comfortable seat (with a back) for mothers. The play area should face South (in the Northern Hemisphere) and should be in a sheltered spot.

10. Nursery Schools. I have included Nursery Schools under the heading of play areas since the children are out of doors whenever it is possible. The Nursery School, or the good nursery, provides the ideal playground for the young child, the equipment is suitable for his age and ability and the nursery school teacher is trained to help him stand on his own feet and to enjoy the fun of playing with others.

11. Areas for Ball Games. Although mentioned last, there is much to be said for considering the older children first. Much damage to the younger children's play things occurs because the bigger boys have nowhere of their own in which to play. Even in a small housing scheme it is desirable to have an enclosed corner for active older sports.

12. Comprehensive Playgrounds. The Comprehensive Playground, like the comprehensive school, is intended to cater for children of different ages and interests. It therefore incorporates most of the playgrounds for one area. The essential feature of some of these schemes is a play leader in charge. Experience with all these types of playgrounds has shown that the presence of a leader attracts the children into and keeps them within the playground. In the play area without a leader there is a tendency for the child to be held for a short time, and then he wanders off elsewhere for amusement.

13. Problems.

(a) Lack of space. Is it desirable that there should be required space standards for play areas in new housing schemes?

(b) Lack of money. Is enough money spent on play areas in comparison with other amenities considered essential and in comparison with the total cost of housing schemes? If good play areas are essential and play leaders an advantage, who should pay for them?

(c) Negative attitudes. Is public opinion sufficiently aroused about the need for good play areas? Do we take a "moral" attitude that it is the duty of parents to look after their children? Can they in fact provide for their leisure needs in a small house or flat? Are playgrounds a community responsibility like education and should they be planned with the same care as primary schools?

(d) Division of responsibility. Is there sufficient co-operation between parks, education, housing, health committees and voluntary action?

(e) Lack of trained play leaders. If we accept the view that play leaders could solve some of our playground problems, how are they to be recruited and trained?

The Architect and Building News

PLAYGROUNDS IN SWITZERLAND

"Switzerland on View," The Architect and Building News, October 7, 1959. Pages 265-282. Illustrations.

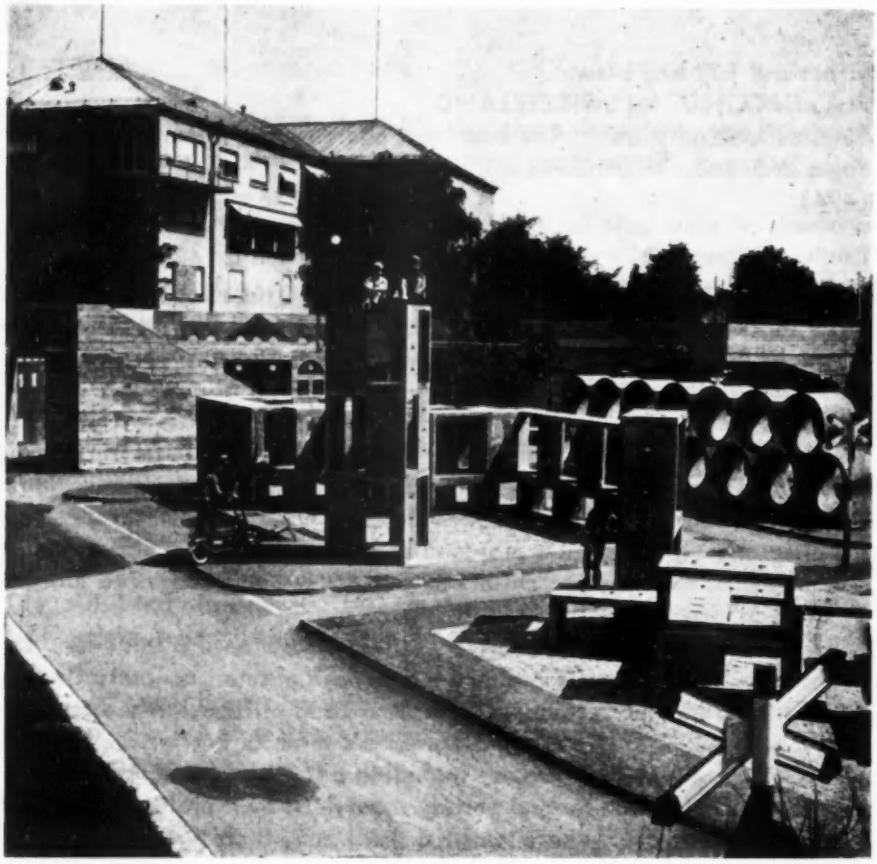
333.32 (494)

1. Many of the ideas set forth in the previous two articles are actually now put into practice in the new playgrounds in Switzerland. The Heiligfelt playground puts together many of the standard pieces of equipment into a more interesting form, while the later Buchegg playground is more advanced and related to imaginative play.

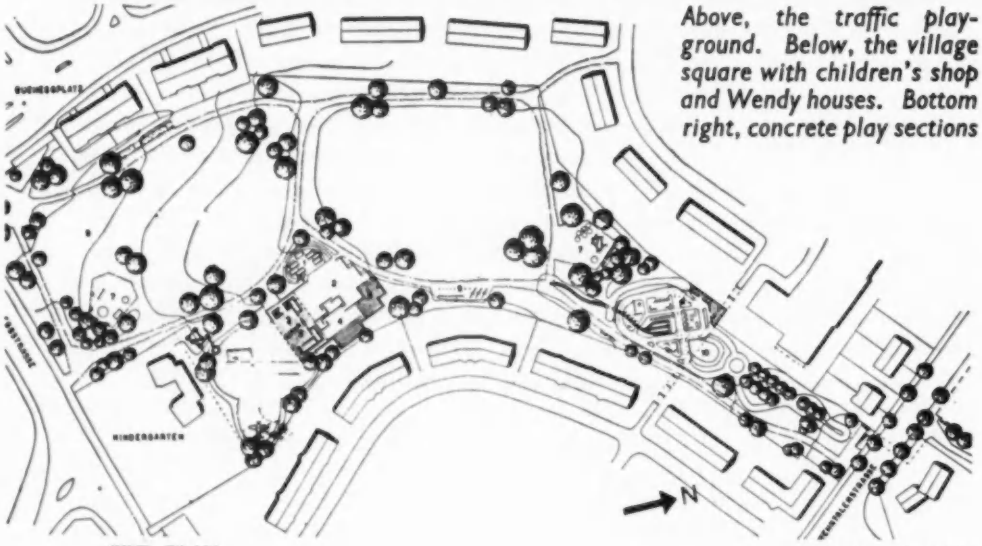
2. The Buchegg playground is the latest in Zurich. It serves an entire neighbourhood and was built under the auspices of Pro Juvenute, the Swiss organization for childrn's welfare. Each neighbourhood will eventually have a similar playground. Buchegg is officially described as a play and recreation centre for young and old, and its use is by no means restricted to children. Parents are encouraged to join in.

3. There are two main areas of activity at opposite ends of a large landscaped field. At the top end is a loosely grouped assemblage of small concrete flat-topped buildings looking rather like a stage-setting of an Arab village. These huts, many built to children's dimensions, contain props for all kinds of activities. The two hobby rooms, fully equipped with tools, including a lathe and an electric kiln, are used mainly for painting, joinery and pottery supervised by a professional play leader and by interested grown-ups. There is also a small zoo, a children's shop set in a children's village, a children's theatre, a library, and a reading room. At the lower end of the field is a traffic playground laid out with miniature roads, crossing, intersections and traffic lights. The children drive around on scooters and bicycles.

4. The Heiligfelt playground in another part of Zurich was built a few years ago. It contains standard elements such as swings, see-saws, climbing trees and frames, miniature houses, sandpit and paddling pool and its interest lies in the virtuosity with which these elements are put together. Standard concrete sections are used most imaginatively in ways which would astonish their manufacturers. Concrete sewer pipes are made into a train, bridging sections into a stepping stone surround and circular tanks into a pattern of paddling pools at different heights which can overflow into each other. Mothers can keep an eye on their children either from seats in the playground itself or from an open-air pavilion on a low hill overlooking the site.



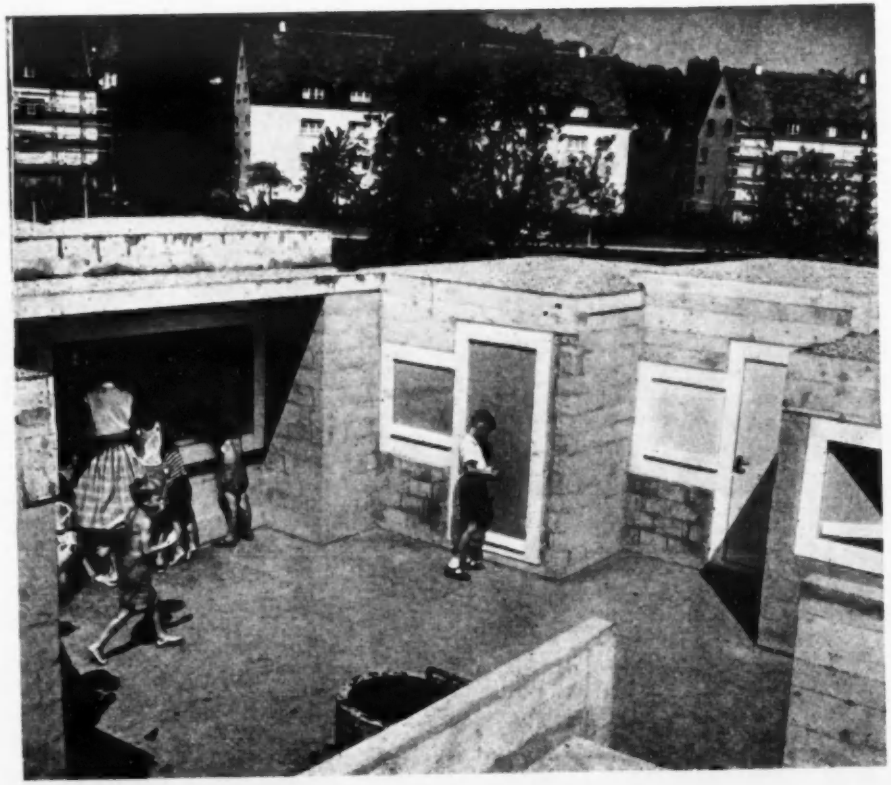
Above, the traffic playground. Below, the village square with children's shop and Wendy houses. Bottom right, concrete play sections

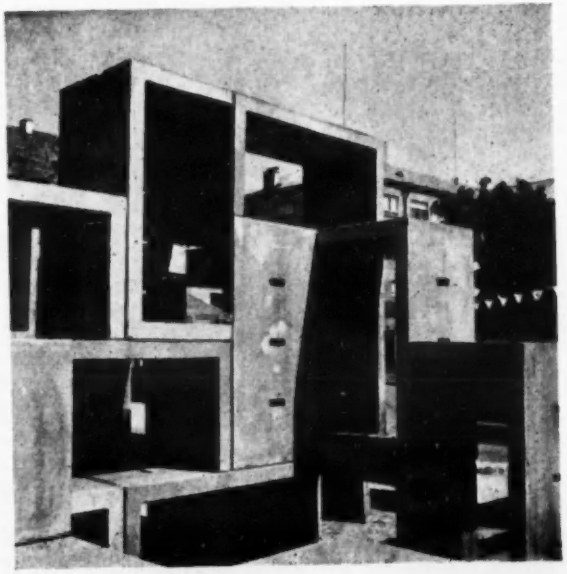


SITE PLAN **SCALE : 1 : 3,000**

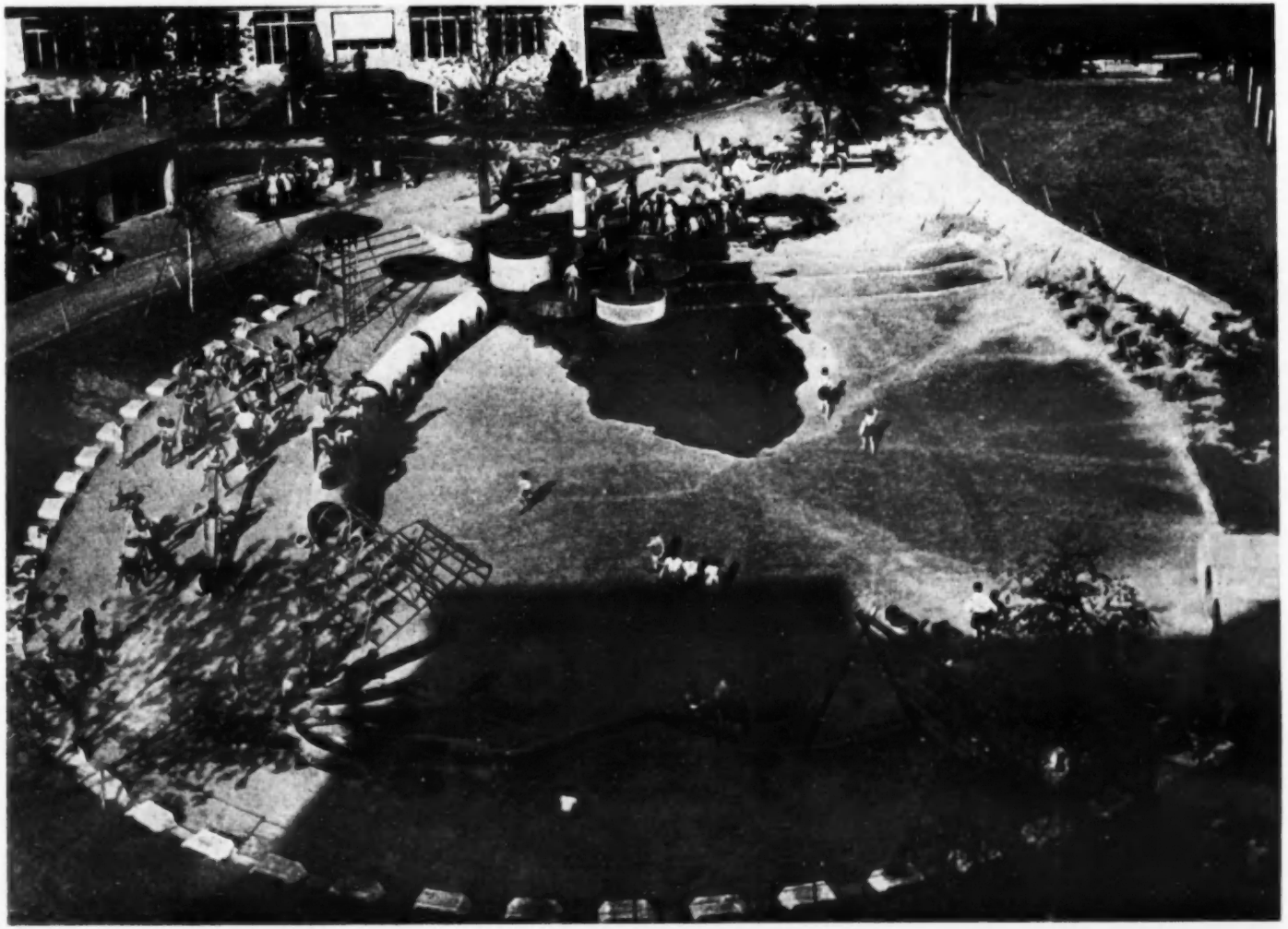
KEY: 1. *The village square.* 2. *Piazza.* 3. *Two interconnected hobbies rooms.* 4. *Open-air theatre.* 5. *Club-room, children's library and reading room.* 6. *Toilets.* 7. *Two playgrounds for small children.* 8. *Meadow for family picnics in summer and tobogganing in winter.* 9. *Swings and seesaws.* 10. *Children's town and traffic playground.*

THE BUCHEGG PLAYGROUND





Playground at Heiligfeld



An aerial view of the Heiligfeld playground

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